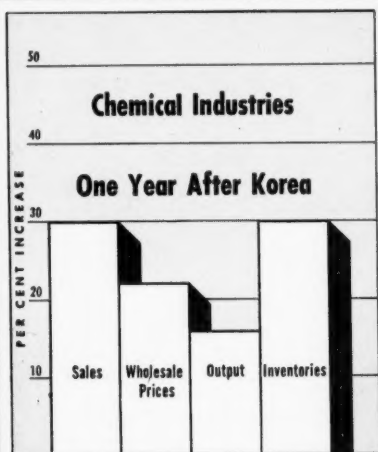


Chemical Week

July 7, 1951

Price 35 cents



◀ **One year after Korea: Chemical industry doubles normal growth rate to meet defense needs ...** p. 11

Fluoridation of water supplies catches on; chemical and equipment makers ready sales push p. 14

Researchers eye defoliants as weapons against baffling cotton disease p. 19

◀ **Cleaner air, better recovery; carbon black maker adopts synthetic fiber filter** p. 23

Water-based hydraulic fluids get Navy O.K.; advantages: cheap nonflammable p. 27



Insecticide-dusting
the modern way.

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one of many uses for CHLORINE

Chlorine is an essential component of many insecticides and weed killers. But it is also in heavy demand for other important uses. To its direct applications as a bleach and as a sanitizing agent are added its constantly expanding use in the manufacture of pharmaceuticals — anti-freeze — chlorinated hydrocarbons for solvents and refrigerants — synthetic glycerine — chlorinated styrene and polyvinyl chlorides for plastics and rubber.

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Chemical Week

Volume 69 Number 1

July 7, 1951

OPINION	2
NEWSLETTER	7
BUSINESS & INDUSTRY	11
RESEARCH	19
PRODUCTION	23
SPECIALTIES	27
MARKETS	31
BOOKS	38
MEETINGS	38
BOOKLETS	40

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July 7, 1951

A PRACTICAL APPROACH for Using...

POLYCO BUTADIENE- STYRENE LATICES with Compounding Ease

Now, for the first time, there is available from a single source of manufacture a complete range of butadiene-styrene latices wherein the composition of both the copolymer system and the emulsifier system can be selected for your specific application.

Note series of acid and metal-ion stable latices developed to offer widest possible latitude in compounding, consistent with economy and versatility.

ROW*	BUTADIENE- STYRENE RATIO	COLUMN#		CHARACTERISTICS AND USES
		A	B	
1.	0/100	220RS	220NS	Discontinuous, flaky film.
2.	20/80	398-20RS	398-20NS	Discontinuous film, Reinforcer and drier.
3.	30/70	335-30RS	335-30NS	Continuous, slightly flexible film. Tough and horny. Reinforcer and drier.
4.	35/65	350	350-35NS	Continuous, clear to slightly hazy film. Tough and flexible with no tack. Base for water. Paints and paper coatings.
5.	40/60	350-S	350-N	Continuous, clear to slightly hazy film. Tough and flexible with slight tack. Paint, paper, leather and textile coatings.
6.	50/50	417-50RS	417-50NS	Continuous clear film. Tough and flexible with slight tack.
7.	70/30		397-70NS	Continuous, clear film. Very flexible. Extender for GRS and natural rubber. Adhesive base.
8.	100/0		418-100NS	Excellent extender for GRS and natural rubber latices.

*Polycos in the same horizontal row have essentially same film characteristics.

#Column A lists anionic latices based on resin soaps and stabilized to mechanical action and foaming.
#Column B lists latices stable to acids and metal ions. Latices in A and B available at 45% total solids content.

Coating, adhesive and saturant users should check their requirements against this table.

For complete information send for data sheet P-24.



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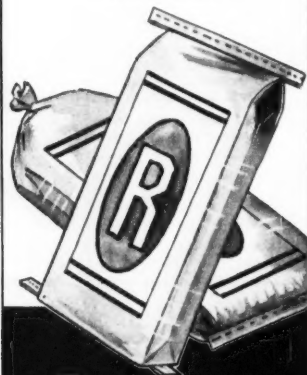
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RAYMOND
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SACKS

OPINION

Cyanide Boom

TO THE EDITOR: We have read with considerable interest the article "Fibers Spur Cyanide Boom" (May 12) . . . We were somewhat surprised to see that you omitted from your tabulation of producers of hydrogen cyanide and sodium cyanide the name of Pittsburgh Coke & Chemical Co.

Pittsburgh Coke & Chemical Co. has been isolating pure hydrogen cyanide from coke oven gas on a commercial scale since late 1942. We have been producing and selling tonnage quantities of sodium cyanide since that time . . . have made limited quantities of other cyanides and cyanide derivatives during the same period.

Research and process development has been carried on and is being continued on both processes for the removal of hydrogen cyanide from coke oven gas, and on the production of cyanide derivatives.

Inasmuch as we believe that our plant was the first in this country, if not in the world, to recover hydrogen cyanide from coke oven gas, we feel that this omission should be brought to your attention . . .

HARRY F. PFANN
Manager, Product Development
Pittsburgh Coke & Chemical Co.
Pittsburgh, Pa.

CW tabulated seven facilities with individual capacities of a million pounds or more—expressed in terms of HCN. We are glad to add Pitt Chem's hitherto unrevealed output of 825,000 lbs., upping the 1951 total to over 94 million pounds. Estimated 1952 U. S. capacity: over 192 million pounds. —Ed.

Chlorine Imports

TO THE EDITOR: I suggest that you recheck the accuracy of the statement made in your Newsletter . . . (item 5, June 9) regarding chlorine.

I am informed that, as the result of the Torquay negotiations, the United States has undertaken to grant the following reduction:

Pre-Torquay rate	Torquay rate
------------------	--------------

Par. 5 Chemical elements, salts and compounds, not specially provided for 25% ad val. 12½% ad val.

It has been announced that the above rate is expected to become effective on June 6th, 1951.

I understand that chlorine is classifiable under this item.

G. E. GOLLOP
Special Assistant to
Vice-President
Canadian Industries Ltd.
Montreal, Canada

True. A roving CW editor telegraphed a round-up of significant Torquay tariff changes from Montreal. His observations concerning the availability of chlorine (and other chemicals) in Canada came through as despatched, the actual tariff rate on chlorine was garbled in transmission.—Ed.

A Bit Ambitious

TO THE EDITOR: . . . We very much appreciate your publishing an item (May 26) . . . about our organic solvent product, "Wilsolve" . . . which eliminates the problem of sanding floors by quickly removing varnish, shellac, wax, plastic, . . .

In its essentials, this article was excellent, but in one or two instances the coverage was a bit ambitious . . . resulted in several misinterpretations of fact . . .

It was stated that the product is non-explosive; actually all our cans are carefully labeled to inform users that care should be taken to keep the product away from fire or open flames. It was also stated that no steel wooling is required. This . . . is largely a matter of semantics—for while no sanding or scraping are needed to remove varnish, we do advise users after pouring a little of the liquid on a small area, to let it stand a minute, stir it briefly with steel wool . . . remove with a cloth or squeegee.

EDWARD M. LOESER
President
Lowebeo, Inc.
Chicago, Ill.

Thanks, Reader Loeser. CW was both a bit ambitious and a bit ambiguous in its phrasings. By merely mentioning that the product was non-explosive we may have implied it was non-flammable; in saying "requires no steel-wooling" we may have jumbled scouring and stirring.—Ed.

"There is No Lack"

TO THE EDITOR: I think that your recent article "What's Ahead for Titanium" (June 16) was well done and perceptive . . . you avoided the glowingly optimistic attitude which has been taken by some writers, focussed attention on the basic facts

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Gentlemen:

☐ Please send me literature on AERO Cyanuric Chloride

☐ Please send me a sample of AERO Cyanuric Chloride

Name _____ Position _____

Company _____

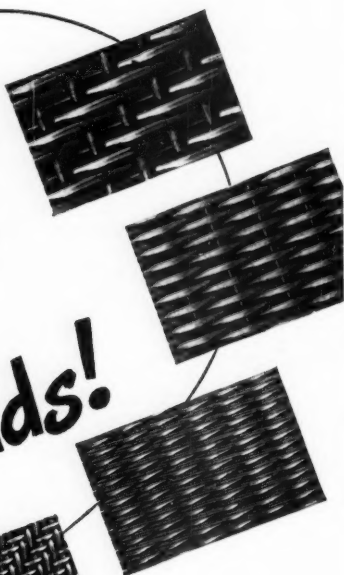
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FILTER
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that
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Study the shape of the solids in your solution being filtered. That's just as important as the size, if you want clarity of filtrate. Then write us fully about the solids and we'll be glad to recommend the weave of the cloth that will "stop" them.

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OPINION

and realizable aspects of the future. However, there is one minor statement in your report which raises a question in my mind. . . .

You say that "There is no lack of titanium . . . it's the fourth most abundant metal in the earth's crust . . ."

In my college days I studied geology . . . collected quite a few notes. And here is what they tell me: The earth's crust is 40 miles thick . . . titanium occurs mostly in the 10 mile upper layer of this crust . . . which is about 95% igneous rock. Ti is a minor oxide and occurs only as an accessory mineral of 1/2% magnitude in other rocks.

For example, a granite might run 98-99% quartz, feldspar and mica and visual examination would show tiny specks of accessories. One of these accessories and the prime source of Ti is hornblende. Even here Ti is only 15% of the accessory . . . and 15% of 2% makes Ti only 0.03% of the granite rock as a whole!

Most of the Ti of the earth's crust is bound up as a silicate . . . is quite inaccessible. Some years ago . . . to get the composition of the earth's crust . . . researchers took some 12,000 typical, virgin (unweathered) igneous rocks and analyzed them. This showed that Ti was the ninth element, tenth oxide. This is the boxscore:

O	46.59%
Si	27.72
Al	8.13
Fe	5.08
Ca	3.63
Na	2.85
K	2.60
Mg	2.09
Ti	0.63

Total 99.45

Even major sources of Ti are minerals occurring together with much gangue . . . not very high in Ti content. For instance, rutile is about 60% Ti, ilmenite 30%, titanite, 30%.

It is my feeling that this information might be of interest to you. . . .

J. L. SCOBIE,
Denver, Colo.

To deep-delving Reader Scobie, CW is obliged for his amplification of our titanium data.—Ed.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 18, N. Y.

We Mobilize for Freedom

CONTROLS . . . A Two-Edged Sword

It may seem dangerously premature to talk about getting rid of emergency government controls while all-out war is still an imminent possibility.

But success in this strange struggle for our freedom into which the Russian Communists have plunged us requires that we:

1. Maintain a whole battery of controls designed to speed defense production and curb inflation, and at the same time

2. Work to end the controls at the earliest possible moment.

Here is the reason why this editorial—fourth in a special series on mobilization for defense—is devoted to the need for a speedy release from controls.

If the Russian Communists can force us to maintain indefinitely the present system of government controls, they will have won a tremendous victory. They will have saddled us with a system of collectivism which, over a period of years, would be fairly certain death to freedom of business enterprise.

Make no mistake about it. This is not an argument against emergency controls. We need controls now to break a right of way for

our mobilization program through the business boom. Indeed, the third editorial in this special series was titled "Why Controls Are Necessary." It stressed both the need for controls and the need for positive cooperation to make them work.

Controls Can Undermine Our Economy

But these controls surely chisel at the foundation of our normal economic system. So long as we have them, many if not most key business decisions will be made in Washington bureaus rather than in the free market place. For example, the *National Production Authority* administers a *Controlled Materials Plan* (italics ours) which directs the flow of basic metals, and decides who can use them for what purposes.

Happily, the people who operate these controls are not using the methods of a secret police state.

Even more happily, most of the leaders who have been drafted to manage the controls are not in love with their jobs. They are doing their best in the thankless task of making controls work. They recognize the danger of chronic controls.

But the fact remains that our economy is

operating under arrangements which carry it a long way toward the pattern of centralized control the Russians would inflict on the world.

The Wilson Plan

A plan for getting rid of these controls has already been developed. It was put together by our Director of Mobilization, Charles E. Wilson — while he was working day and night to set up the necessary emergency controls.

The Wilson Plan — if we escape all-out war — will strengthen our defenses and our economy. By 1953, it calls for:

1. Providing the weapons to equip an armed force of 3½ to 4 million, together with a supply of weapons for our allies.
2. Building a stockpile of weapons which, with current production, would be sufficient to carry on an all-out war for a year.
3. Building the manufacturing capacity by which we could rapidly expand our production of weapons if all-out war should come.
4. Increasing the productive capacity of industry enough to resume the expansion of our civilian economy.

With these jobs done our economy would be big enough and strong enough to meet both civilian and military requirements. And the government controls needed for mobilization could be speedily dropped.

Call for Sacrifice

The Wilson Plan requires a major effort — it means spending more than \$50 billion a year for mobilization. That is almost 20 percent of our total production. And this cannot be done without sacrifice. For a time, particularly in the next year, living standards will drop.

But the sacrifice required is amazingly small. At the peak of the defense effort, civilians will still have available to meet their needs about as much as they did in any year before 1948.

To make the Wilson Plan succeed we must curb inflation. A second year of inflation such as that which we have had since the Korean war started would multiply disastrously the costs of our defense program. One key part of a successful program to curb inflationary pressure, which soon will be building up again, is a pay-as-we-go tax program. The second editorial in this series urged that we do our utmost to pay as we go.

We Cannot Out-Control the Communists

But, above all, to make the Wilson Plan work we must keep our sights set on the crucial importance of increased production. Our problem is to increase our capacity to produce so that we can carry both a major military program and an expanding civilian economy for as many years — General Bradley thinks it might be fifteen or twenty — as the menace of Russian Communist aggression persists.

If we do not produce enough to do this double job, we shall be confronted with the prospect of having to live indefinitely under government controls of the sort that have been set up since the start of the Korean war. That would be delightful to the Russian Communists. It would go far toward making over our economy on the Moscow model.

Even if we wanted to, we never could hope to out-control the Russians. They are miles ahead of us in that line. But we can out-produce them, by a tremendous margin. By doing that we shall travel the surest road to victory.

McGraw-Hill Publishing Company, Inc.

NEWSLETTER

Two more chemicals came under National Production Authority's thumb this week as allocation of methyl chloride and sebacic acid was ordered. Henceforth producers of these commodities must get specific NPA approval before they can ship.

The methyl chloride action, predicted weeks ago (CIW Newsletter, May 26), is characteristic of this interim period when new capacity lags behind mounting defense needs. A lot more methyl chloride is on the way, just as higher output of most now-short chemicals is slated, but there'll be a year's wait for substantial relief. (See p. 11 for a first-anniversary appraisal of Korea's impact on the industry.)

Although new production units can be built in a year, there's no factory to turn out technically trained chemists and engineers overnight. Engineers Joint Council claims a current deficiency of 60,000 engineers, taking into account this June's graduates (38,000) and the number slated for military service (19,000).

In view of this shortage the Council is especially concerned about the new draft law, with its penalizing provision for those deferred as essential workers (CW Newsletter, June 2).

The Council endorsed a provision that would have set up reserve deferment appeal boards, but this measure was stricken from the bill.

But still new plans and new plants are being pushed to bring in additional supplies lack of manpower notwithstanding:

One of the larger units is Standard Oil of Indiana's \$2.5 million iso-octyl alcohol plant at Wood River, Ill., slated for completion late next year (if lack of construction materials doesn't hold it up). Capacity: 10 million pounds a year. Indoil Chemical Co., a Standard subsidiary, will handle sales. Major outlets: lube additives, vinyl plasticizers.

Standard will also build a \$142,000 olefin concentrating unit at its Sugar Creek, Mo., refinery. Product of this unit will be raw material for the alcohol plant.

Phillips Petroleum Co. will increase capacity of its Borger, Texas-to-East Chicago, Ind., pipeline by 30,000 barrels a day; 500 additional miles of pipe will be laid. Reason: propane (LPG) shortage in the Chicago area. Underground storage facilities near Borger, Kansas City and Chicago will hold summer surpluses against winter demand.

Naugatuck Chemicals (U. S. Rubber) will double capacity of its vinyl resins plant at Ashtabula, Ohio. This is the plant Naugatuck purchased from Glenn L. Martin Co.'s Chemical Division.

The South is a big gainer as most of the 57 pulp and paper mills in Alabama, Arkansas, Florida, Georgia, North Carolina and Texas carry out expansion plans. Total expansion will top \$200 million.

Not until next fall—and possibly not for years—will the financial fog surrounding General Aniline and Film be cleared away. Remington Rand has asked the U. S. Supreme Court to review its claim that it has an option to purchase a controlling interest in GAF. If the court refuses, that's the end of it; if it says yes, you can expect a lengthy court case. But no decision is expected until October.

Titanium activity is boiling all over the country this week as four companies have turned on the heat:

Horizons, Inc., and Ferro Corp. have teamed up to form Horizons Titanium Corp. The new firm will set up a pilot plant in Cleveland to study its new, still-secret process developed by Eugene Wainer in the parent Horizons' laboratory. (Wainer was formerly with Titanium Alloys Manufacturing Co., now a division of National Lead.)

The new process is expected to knock down the price of titanium ingots from the current \$7 a pound, but details and economic comparisons will have to wait some time—until pilot runs are completed.

Monsanto Chemical Co. and National Research Corp. are also teaming up, will carry out research at Monsanto's central research laboratories in Dayton, Ohio. The project—study of metallic titanium production processes—is still in an embryonic stage.

The Munitions Board is heeding businessmen's protests on two scores. First, it is revising its February order under which quantity and dollar value of military contracts were withheld from publication. Reason given at the time: security.

Now the weekly synopsis sheet will show quantities and dollar value of all unclassified contract awards—both negotiated and advertised—between \$25,000 and \$250,000. Over that amount, only dollar value will be given out. This change will permit chemical makers to compare their bids—or what they would have bid—with awards.

More time for bids will result from another policy change. The Board will henceforth publicize all unclassified negotiated and advertised procurements over \$10,000 at least 18 days before bids are due. On the rest, less-than-18-day advertising will be held to a minimum.

Until now CHEMICAL WEEK has had to omit many requests for bids when the closing date fell before date of issue; the time allowed on several bids simply wouldn't allow a chemical firm to obtain the forms and file its bid with the proper agency. The new policy will help.

Aerosol packers and the glass industry are quietly cooperating on development of glass containers for pressure-dispensed specialties.

One major problem: a suitable plastic coating to prevent shattering if the container is dropped, left in the sun, etc.

Main objectives: to relieve dependence on hard-to-get tin cans, to permit aerosol-packaging of specialties too corrosive for cans—e.g., deodorants containing aluminum salts, silicofluoride mothproofers.

DDT makers set their sights for a hefty 105 million-pound output to meet needs for the twelve months beginning October 1. The production goal is 10 million pounds higher than during the current twelve-month period. They told NPA they have the facilities; but getting enough benzene, chlorine and sulfuric acid is another thing.

You may see a shortage of dyes this fall unless the dye industry succeeds in getting more sulfuric acid, phthalic anhydride, p-chlorophenol and other short intermediates. Dyes for civilian work clothing will be hardest hit. NPA is also thinking about an order requiring dry dyes to be shipped in containers other than steel drums. A further straw on the drum industry's already-cracking back is an urgent need for drums to ship petroleum products to friendly foreign nations.

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Warm up before the game

An old duffer we know told us that.
He'd say, "Ever notice how much better you do
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warm up before the game!"

That's why we're asking you right now
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your caustic soda from Wyandotte. . . .
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unless you're a customer of record.

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Because we're a source you can depend on.

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CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE
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CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE • PROPYLENE
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BUSINESS & INDUSTRY



CONFLICTING MARKETS: What the military needs, civilians must do without.

Big—But Only Beginning

U.S. chemical output climbs to a record high despite basic shortages in raw materials.

Wholesale chemical prices are moving slowly downward from the February crest, aftermath of the 1950 buying spree.

On the horizon: Stepped-up mobilization needs will again squeeze consumers before year's end, but new production capacity will bring some relief in 1952.

The first anniversary of the Korean outbreak ends a year the likes of which the chemical industry has seldom seen. In retrospect, the period has been a kaleidoscope of effort, both constructive and confused. Yet out of these growing pains of an industrial economy have come new production records—despite material shortages and sundry price shenanigans.

The attempt to anticipate requirements of the future hinges to some extent at least on a closer look at the year since Korea. Prevailing opinion in government and industry circles assumes that the impact of mobilization has hardly been felt.

More Like It: Now that the design and tooling-up operations in heavy industry are well under way, more military orders are expected to roll in

—and with them, heavier demand on chemical production. Fortunately, the chemical industry manages to be more flexible than most for the switch, either part-way or total, from a civilian to a military economy. But even today's record-shattering pace couldn't handle, all-of-a-sudden, full-scale demand from both sides, unless and until new capacity can be brought in.

Output today is the highest ever, but somehow demand still stays several leaps ahead. The consumer's plight on supplies would be a lot more desperate if the chemical industry, with typical vigor, had not begun to increase production capacity even before Korea.

Since early 1951, the Defense Production Administration has effectively assisted in spurring the growth of de-

fense-needed production facilities by allocation of material, and by financial encouragement of industry through rapid amortization of new capacity. But to be realistic, only a small part of the newly authorized expansion will be on stream in 1951, the greater part by the end of 1952, with substantial additions in 1953. That could mean a long, nettling wait for those without who need it earlier.

Quick Profits: Of equal rank with deficient production capacity is an underlying shortage of chemical raw materials, including such basic ones as sulfur, chlorine, and coal-tar chemicals. From these are derived many of the chemical underpinnings that support the over-all industrial structure.

Because of real and anticipated shortages of these chemical raw materials, last year's slogan was "Buy chemicals, they'll be short." The first buying rush and prospects of an upward price spiral forced even cooler heads to hop on the bandwagon. As consumer stockpiling and scare buying keyed the second half of 1950, available supplies dwindled and prices soared.

Buyers' ranks were swollen by those who believed that chemicals were just dandy for speculation purposes. Interest in the resale market perked up after the quietude of recent years. Of course, the established jobbers performed a real service for spot buyers left stranded in the spot market; but some of more recent vintage took advantage of the situation.

This urge to buy was not limited to the U.S., it was literally worldwide. Foreign chemical exporters were not slow in hoisting their price sights, or in withholding supplies in hopes of striking it rich later. In this spree, prices of most imports zoomed, many doubling and quite a few tripling over the year-ago levels.

Some of the more notable price advances were recorded for carnauba wax, castor oil, and other vital, non-domestic natural products. Chemical raw materials from other sources did not lag far behind, with strapping price gains in benzene, naphthalene, and cresylic acid.

Controls On: As the aftermath of panicky stockpiling and slow-moving needs for mobilization, prices would likely have started to descend after the first of the year. But the newly

created Office of Price Stabilization, acting to curb the specter of inflation, clamped a ceiling-price lid on the U.S. economy at the end of January. The hurriedly-applied GCPR had the effect of slowing not only the price spiral, but also the flow of urgently needed commodities.

Several loopholes in the regulation allowed import costs to rise unchecked, and permitted the revival of a chemical grey market where chemicals could be sold and re-sold with a profit each time. Actually, the price index continued to climb until the end of February. Since the middle of March the price trend has been slightly but persistently downward—a development more closely tied in with supply and demand than with government edict.

Black-and-White: Results of this economic interplay are shown by comparative figures today and a year ago.

Production and inventories have climbed steadily upward; prices hit

U.S. Chemical Industry—June, 1951 vs. June, 1950			
	June, 1950	June, 1951 (est.)	High
Production (Federal Reserve Board)			
Chemicals and Allied Products	261	305	Now
Industrial Chemicals	451	538	Now
Prices (Bureau of Labor Statistics)			
Chemicals and Allied Products	114.5	143	February (147.3)
Chemicals	117.3	138	" (139)
Drugs and Pharmaceuticals	122.7	184	" (185.2)
Fertilizer Materials	108.4	117	" (118.1)
Oils and Fats	111.9	180	" (217.3)
Sales (Billion Dollars)	1.38	1.73	Now
Inventories (Billion Dollars)	2.03	2.61	Now

a peak around February with a slight decline since, and sales have climbed substantially, but with some fluctuation in the last few months.

Coming Up: These have been some of the important highlights in the year since Korea. The curtain is about to rise on a more active mobilization.

Production should climb in the second half of the year, with CMP and chemical allocations channeling more production into the defense effort. In

1952, new production capacity will relieve much of the basic shortage in sulfur, benzene, chlorine, and phenol. Increased supplies point to a downward trend in resale prices, narrowing the gap over producers' quotations, and brightening the outlook for the spot buyer.

But if the imperative needs of mobilization are stepped up in a hurry, the "non-essential" user will get little but sympathy.

Million-Dollar Bid

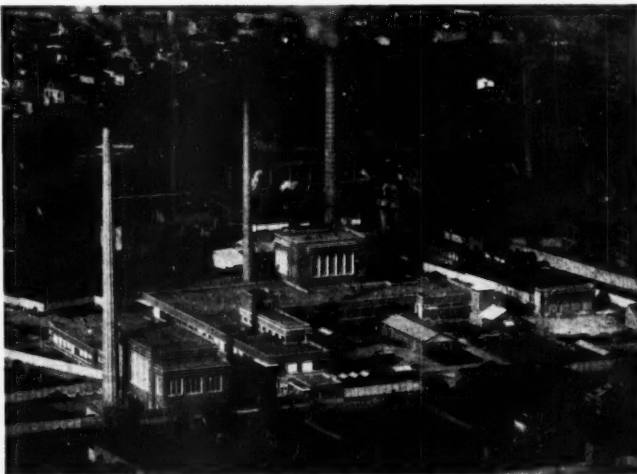
After two years of preliminary skirmishing, Roussel Corp. is now launching a full-scale assault on the American pharmaceutical market. It will bring to this country commercial quantities of UCLAF (Usines Chimique des Laboratoires Francais) products. An indication of the scope of its plans lies in the proposed sales target of \$1 million.

Even the million dollars in annual sales will not make a big dent in the overall American drug market. But the company's actions are under close scrutiny by big American concerns; it may provide some significant competition in certain pharmaceuticals.

One of the compounds to be pushed is calciferol—crystallized vitamin D₂. A survey of consumption in this country left Roussel officials surprised—so surprised that they refused to believe the figure.

In any event, it seems certain that U.S. consumption of calciferol runs well below that of European countries. In France, it is used to the tune of 50-60 kilograms a month. Roussel sees no reason why it should not attain the same popularity here, is prepared to furnish 60 kilos a month.

Advantages of calciferol over the amorphous form of the vitamin are a subject of dispute among experts. Both are irradiation products of ergosterol, but the amorphous version contains some by-products that are either under- or over-irradiated. The



ROUSSEL LABORATORIES: American pharmaceuticals face French ambition.

by-products have no antirachitic activity, are toxic in varying degrees.

One school contends that by removing the harmful by-products, toxicity is appreciably lessened. The other school holds that the reduction in toxicity is not significant. They maintain that the only advantage of calciferol is the fact that it is a much purer product—at a considerably higher cost.

Another product that will be pushed in the United States is digitoxin. A poor crop of the digitalis leaf in Vosges (France) may mean that only

limited quantities will be available this year. Roussel estimates that the U.S. can absorb 40-50 kilos a year and, with a better crop, the company can supply all of it.

Roussel activities will not be confined to these two products, however. Other products that will be marketed include nucleic acid, sodium nucleate, histamine, and sodium paraminosalicylic acid (PAS).

In France: Roussel Corp. is the sole American distributor for the huge French combine, Roussel Laboratoires. Organized in 1911, the Rous-

sel labs had a rapid growth, climaxed by the completion in 1930 of its UCLAF plant. Another highlight in its growth was the construction of its own glass factory. This was done when it was discovered that ampoules were consuming glass tubing at a rate of 10 mi. per day. At present the parent company employs over 3,000 people, has plants in South and Central America.

Its decision to enter American markets looks like a well-planned campaign following a survey of American production and needs. Roussel Corp. was established in New York two years ago; limited quantities of steroids have been sold since then. Now with the company ready with bigger plans, its future moves may be well worth watching.

Two-Goal Contest

Since its beginning two years ago, the Glidden Company's Award contest for salesmen has grown to a point where it has become a permanent part of the company's overall sales program. And with this week's announcement of the 1950 winners, many other chemical managements are bound to begin studying the Glidden idea as one good way to keep salesmen inspired . . . and possibly perspired. Glidden's president, Dwight P. Joyce, explains that the plan was at first confined to the company's two main consumer product divisions: Nubian Paint and Varnish Division and the Durkee Famous Foods Division. But this year the plan was extended to include the company's Feed Mill Division in Indianapolis.



D. P. JOYCE: Sales volume isn't the only pay-off.

The Plan: In order to make the contest as fair as possible, the competition is divided into two sections, one for senior salesmen, one for beginners. Three awards are offered in each division: Senior—first prize, \$1,000; second, \$500; third, \$250. Beginners get \$500, \$250 and \$100 respectively.

Joyce explains that the plan is not based on sales volume alone. "We know that much of our progress is due to men who extend their interests beyond the mere accepted duties as salesmen . . . for this reason the contest is based upon all-round achievement by the salesmen."

Many Points: Accomplishments taken into consideration by the plan are: percent of sales volume to potential sales, new accounts sold, percent of distribution to complete coverage, territorial gross profit, average daily calls, rated promptness in attending to leads, percent of leads sold, rated attention to daily reports and many other sales criteria.

Nominations for candidates for the awards are sent to the home office by regional sales directors. There, a committee of five, headed by president Joyce sits in judgment.

Big Reward: For the company the big reward, according to Joyce, is that the contest uncovers managerial talent. Last year's beginner-winner is an executive in the company today. . . . which proves the contest pays off in more ways than one.

Rollback Ruckus

By a weird chain of political circumstances, consideration of the impact of Ceiling Price Regulation CPR 22 on the chemical industry was introduced into the current congressional debate on a bill to limit OPS rollbacks on the prices of meat and other consumer products.

The big jump from the subject of beef to that of butanol was neatly negotiated by Sen. Irving Ives, R., N.Y., who used CPR 22's control of chemical prices as a shining example of how well controls can work. The legislator, who filed a report of "individual views" on the subject, said: "Disastrous results to consumers will stem from nullification of CPR 22 as applied to the chemical industry." He added: "CPR 22 would lower chemical prices by a total of \$300-400 million a year."

Ives continued: "The price reductions are expected to affect synthetic solvents, alcohol, methanol, certain plastics, DDT and certain heavy chemicals. Since chemicals are basic



SEN. IVES: Beef to butanol.

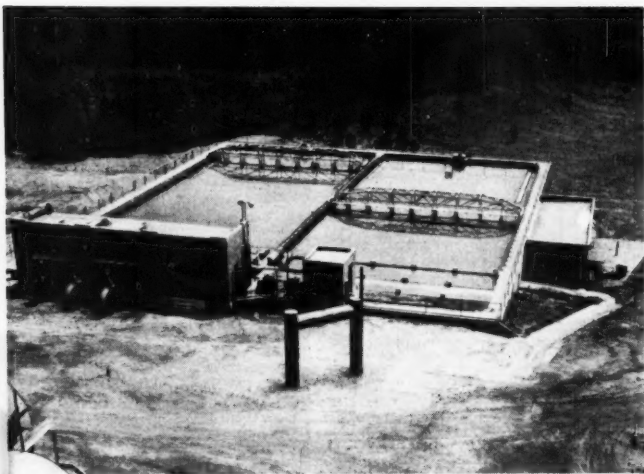
raw materials, this would mean higher prices for a wide range of manufactured goods if the amendment prohibiting rollbacks were adopted."

"Individual" Views?: Fortunately for Ives, his political future does not lie in the hands of the perspiring, perplexed chemical executives who labored for weeks prior to July 2nd (CPR 22 effective date) to complete the paperwork required by OPS.

These men might question the "individuality" of Ives' view which show almost a word-by-word coincidence with memorandum circulated by price boss Mike DiSalle to all members of the House and Senate on June 21. For the record, it should also be noted that almost all of the senators opposed to the new amendment gave forth with statements that sounded remarkably like the wording of DiSalle's memo.

Veteran observers of the Washington scene can't get excited about the choice of words and phrases on such issues, however. They point out that stands on such questions as rollbacks are usually taken along party lines or along lines of legislators' individual needs to satisfy the howls of constituents. In other words, the decision is often made by the legislator first . . . then comes the mad scramble for arguments to support his stand.

"Out" Needed: Unfortunately, on highly complex questions such as the price regulation problem of the chemical industry, senators are often babes in the woods. They are laymen in a technical jungle. To the many neat memo, any compact argument often starts with ax-grinders.



WATER SUPPLY: Addition of fluorides by more and more communities makes a . . .

Water Boom for Fluorides

Fluoridation of municipal water supplies to reduce tooth decay is now practiced or planned by 174 communities.

Backed by the U.S. Public Health Service and various state and local health officials, the treatment is daily becoming more widespread. Smaller cities are leading the parade.

Only 1% of the nation's water is now treated: thus the market potential has fluoride chemical makers goggle-eyed.

All over the country slide rules are getting warm as waterworks engineers figure the cost of adding fluoride to their municipal supplies. They're riding a trend urged upon them by the U. S. Public Health Service, the American Dental Association, the State Dental Health Directors, various state and local health bodies, and vocal women's clubs from coast to coast. In fact, sponsors of the new technique—which is claimed to halve the incidence of tooth decay—read like a "Who's Who" of health authorities.

By this week 174 communities were either adding fluoride to their water or had ordered equipment to do so. Some, like Grand Rapids, Mich., have been using the treatment for years; others, like Louisville, Ky., are awaiting installation of apparatus. Milwaukee, Wis., is about to ask for bids on equipment; Cleveland and Cincinnati are drawing up final plans, and New York City is currently studying costs of such a program for its billion-gallon-a-day system.

The smaller (less than 100,000

population) cities have taken the lead in fluoridation, and consequently only about 1% of the national water supply is now being treated. Nor can you multiply present figures by 100 to get the ultimate potential, for some waters already contain enough—or even too much—natural fluoride.

Brown But Good: Indeed, it was the presence of natural fluoride in Sacaton, Ariz.'s water that gave USPHS researchers, in 1929, the first clue to the value of fluoride in preventing tooth decay. The Indians there had brown, mottled—but sound—teeth. Two years later mottled teeth among Alcoa workers in Bauxite, Ark., were traced to fluoride in the water. Tying these two threads together led, after years of further research, to the present knowledge of fluorine's role in dental prophylaxis.

Not All Ayes: The public has been willing, on the whole, to go along with their health officials' recommendations. Major opposition has come from religious groups such as the Christian Science church, which has blocked fluoridation in San Francisco on the

grounds that it would constitute enforced medication.

Others say that tooth decay is not communicable and is thus a private health problem—unlike typhoid or other water-borne epidemic diseases, which are public health problems; and thus they differentiate between fluoridation and chlorination.

Still others fear that equipment failures or mistakes on the part of waterworks operators might result in occasional overdoses of fluoride, which would mottle teeth or have even more serious effects.

But any apathy or opposition on the part of the public is made up for by the USPHS's zeal in drumming up the program. It is asking for Federal money to develop interest, and there is talk of seeking Federal subsidization of water treatment.

Beneficiaries: Standing to benefit from the boom are chemical companies and equipment firms.

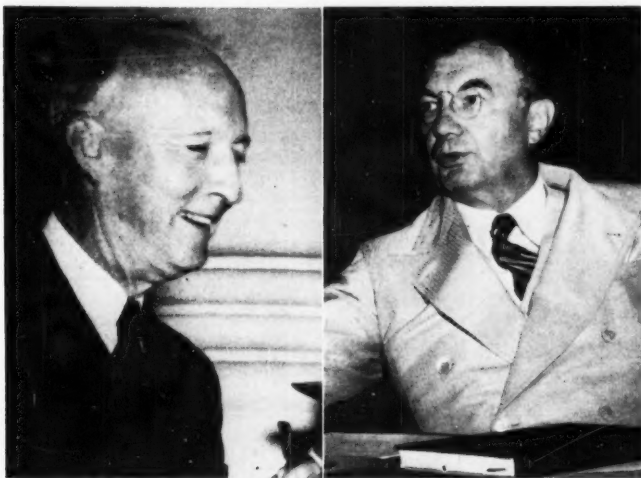
Among the chemical suppliers of sodium fluoride, sodium silicofluoride, or hydrofluosilicic acid—all of which may be used—are General Chemical, Harshaw Chemical Co., Blockson Chemical Co., American Agricultural Chemical Co., Aluminum Co. of America, Davison Chemical Corp., and Baugh Chemical Co. Another, Ozark-Mahoning Co., has developed a special formulation of alum and fluoride, called Flural, for this particular application. Most of these firms are now aiming sales campaigns at municipal water authorities.

Feeding must be controlled to 1 part per million within narrow limits. On large installations this is best accomplished by dry feeders, but liquid feeders using aqueous fluoride solutions are suitable for single wells. Prominent among equipment suppliers are Wallace & Tiernan, Omega Machine Co., Proportioners, Inc., Permutit Co., Inflico, Inc., and Synton Co.

Drop in the Bucket: Even if all the water in the country were fluoridated, it wouldn't add up to a bonanza for fluoride makers. It has been estimated that 45,000 tons a year of sodium fluoride or 35,000 tons of sodium silicofluoride would do the job, but current output of the silicofluoride is about 40,000 annual tons.

It would mean even less to equipment makers, for if ten-year amortization of equipment is assumed, it costs less than the chemicals.

Nevertheless, it adds up to a nice piece of business on all sides, and many firms are cheering the USPHS and similar groups on as they plump for increasing adoption of fluoridation.



JUSTICES BLACK AND JACKSON: One said, "Conspiracy;" the other, "Foreclosure."

More Restraint Than Freedom

American chemical companies have to review agreements with their foreign subsidiaries to determine whether they now run afoul of the Sherman Act (antitrust law). A recent 5 to 2 decision of the U.S. Supreme Court holds that it is an unreasonable restraint of trade for an American concern to organize foreign subsidiaries, each limited to serve a particular market area (*Timken Roller Bearing Co. v. United States*, 89, USPQ 462, decided June 4, 1951).

The State Department's Point IV program to foster American investments abroad will be cramped unless the effects of this decision are overcome by an act of Congress.

"Separate Persons:" Dissenting from the majority opinion, Justice Jackson wrote:

"The doctrine now applied to foreign commerce is that foreign subsidiaries organized by an American corporation are 'separate persons,' and any arrangement between them and the parent corporation to do that which is legal for the parent alone is unlawful conspiracy."

Timken was sued by the U.S. to prevent and restrain violations of the Sherman Act. The lower court held for the U.S. Summary of lower court's findings of fact: (1) U.S. Timken together with an English businessman, held a 54% stock interest in British Timken; they also organized French Timken, together held all of its stock. (2) The three Timkens have continuously kept operative "business

agreements" regulating the manufacture and sale of antifriction bearings and providing for use of the trademark "Timken," by the British and French corporations. (3) Under these agreements the parties allocated trade territories among themselves; fixed prices on products of one sold in the territory of the others; cooperated to protect each other's market and eliminate outside competition; and participated in cartels to restrict imports to and exports from the United States.

In its appeal to the Supreme Court, Timken charged that the findings of the court were in error and not supported by the evidence. It contended that the alleged restraints of trade could be justified as reasonable, since they were merely incidental to an otherwise legitimate "joint venture" and an exercise of its right to license the trademark "Timken."

Antitrust Laws Apply: The majority of the Supreme Court, in its opinion written by Justice Black, replied:

"The fact that there is common ownership or control of the contracting corporations does not liberate them from the impact of the antitrust laws . . . Nor can the restraints of trade be justified as reasonable steps taken to implement a valid trademark licensing system, even if we assume with appellant that it is the owner of the trademark, 'Timken,' in the trade areas allocated to the British and French corporations."

The majority also rejected the suggestion that what U.S. Timken has

done is reasonable in view of current foreign trade conditions. Timken's argument was that tariffs, quota restrictions and the like are now such that the export and import of antifriction bearings can no longer be expected as a practical matter; that it cannot successfully sell its American-made goods abroad; and that the only way it can profit from business in England, France, and other countries is through the ownership of stock in companies organized and manufacturing there.

Held Justice Black, writing for the majority: "This position ignores the fact that the provisions in the Sherman Act against restraints of foreign trade are based on the assumption, and reflect the policy, that export-import trade in commodities is both possible and desirable. Those provisions of the Act are wholly inconsistent with appellant's argument that American business must be left free to participate in international cartels, that free foreign commerce in goods must be sacrificed in order to foster export of American dollars for investment in foreign factories which sell abroad."

"Acceptance of appellant's view would make the Sherman Act a dead letter insofar as it prohibits contracts and conspiracies in restraint of foreign trade. If such a drastic change is to be made in the statute, Congress is the one to do it."

It Can Be Done: Some guide as to how American corporations may lawfully do business abroad is given in the dissenting opinion of Justice Jackson in this statement: "It is admitted that if Timken had, within its own corporate organization, set up separate departments to operate plants in France and Great Britain, as well as in the United States, that would not be a conspiracy; we must have two entities to have a conspiracy. Thus, although a single American producer could determine prices and allot territories, that would not be a violation of the Act, because a corporation cannot conspire with itself."

What spelled out conspiracy was that British Timken and French Timken were separate corporations and not department or divisions of U.S. Timken. However, since many foreign governments prohibit or handicap American corporations from owning plants, entering into contracts or engaging in business directly, it seems that the subsidiary set-up is the only practical way of waging competition in those areas.

Said Justice Jackson in his dissent: "The philosophy of the Government, adopted by the Court, is that Timkens' conduct is conspiracy to restrain trade

solely because the venture made use of subsidiaries. It is forbidden thus to deal with and utilize subsidiaries to exploit foreign territories because 'parent and subsidiary corporations must accept the consequences of maintaining separate corporate entities, and that consequence is conspiracy to restrain trade. . . . In a world of tariffs, trade barriers, empire or domestic preferences, and various forms of parochialism from which we are by no means free, I think a rule that it is restraint of trade to enter a foreign market through a separate subsidiary of limited scope is virtually to foreclose foreign commerce of many kinds."

"It is one thing for competitors or a parent and its subsidiaries to divide the United States domestic market which is an economic and legal unit; it is another for an industry to recognize that foreign markets consist of many legal and economic units and to go after each through separate means. I think this decision will restrain more trade than it will make free."

Divorce Final

Commercial Solvents Corporation took another big step forward this week in its plan to intensify the company's market development activities. Step: The creation of a market development group to serve the company's Industrial Chemicals Division, the division that last year earned 34% of the company's sales dollar.

In many ways, this move is the most important in the overall plan which was designed and initiated a year ago by a then new management headed by J. Albert Woods, president of CSC. At Woods' direction, H. J. Henry, vice president of sales, made a comprehensive study of the sales organization and came up with two major recommendations: (1) that the technical service and market development functions of the company be separated, and (2) that the staffs devoted to each be reinforced.

To Date: During the past nine months most provisions of the plan have been put in effect. Technical service activity was centralized at the main plant of the company at Terre Haute, Indiana. And one by one, the company's Agricultural Chemicals, Specialties and Pharmaceuticals Divisions began to redouble their market development efforts. With the creation of the market development group for the Industrial Chemicals Division the divorce between technical service and market development became complete. Service is service and develop-



STRATEGY: Market-prober Dolian and CSC sales-exec F. E. Maple plan grass-roots survey.

ment purely development.

First Job: The new market blazing group will start in high gear, under the direction of Frank E. Dolian, formerly the assistant Manager of the Technical Service Division. First project on the docket will be a grass-root evaluation of CSC's potentialities in the nitro-paraffin field. Object of the study: To determine what additional capacity will be needed to take care of the company's nitroparaffin situation for the next several years. At present all CSC output of these compounds comes from a ten-year old semiworks plant located in Peoria, Ill. The new plant, once its capacity is decided upon, will probably be built in Sterling, La.

Lots of Questions: Market prober Dolian estimates that during the next

few months 487 present or potential users of nitroparaffin will be interviewed and questioned about their requirements. He adds that although calculations of needed capacity will be based on now established uses of nitroparaffins as solvents or in coating applications, additional capacity will be installed to take care of some yet only partially-exposed uses.

Some of the questions asked by Dolian and his staff will be addressed to CSC's Industrial Chemicals Division itself and to other divisions of the company who use nitroparaffin as starting materials or intermediates. Hydroxylamine salts, alkanolamines and nitrohydroxy compounds represent some of these uses.

Like charity, observes Dolian, market development often begins at home.

Current List of DPA-Certified Chemical Facilities

COMPANY	LOCATION OF FACILITIES	PRODUCT	AMOUNT ELIGIBLE	PERCENT
American Cyanamid Co.	New York, N.Y.	Aureomycin	\$12,000,000	60
Armour & Co.	Chicago, Ill.	Adrenocorticotrophic hormone	11,617,500	55
Smet-Solvay Division, Allied Chemical & Dye Corp.	Buffalo, N.Y.	Benzene, polyethylene	6,940,000	70
Harshaw Chemical Co.	Gloucester City, N.J.	Glycerine	290,510	50
Atlas Powder Co.	Wilmington, Del.	Sorbitol	1,531,600	70
Garfield Chemical & Mfg. Corp.	Salt Lake City, Utah	Sulfuric acid	2,500,000	80
Thiokol Corp.	Trenton, N.J.	Bis (2-chloroethyl) formal	601,000	85
Kolker Chem. Works, Inc.	Newark, N.J.	Benzene hexachloride	555,773	50
Signal Gas & Oil Co.	Los Angeles, Calif.	1-butene, butene	500,000	75
Stouffer Chem. Co.	Richmond, Calif.	Sulfuric acid	283,500	80
Diamond Alkali Co.	Painesville, Ohio	Paraffin	1,226,150	70
Sloss-Sheffield Steel & Iron	Birmingham, Ala.	Ammonium sulfate	150,000	85
Sloss-Sheffield Steel & Iron	Birmingham, Ala.	Chemical research	83,600	50
Dow Chemical Co.	Freeport, Tex.	Magnesium ingots	3,660,000	50
Dow Chemical Co.	Midland, Mich.	Magnesium ingots	2,138,000	50
Kaiser Aluminum and Chemical Corp.	Mead, Wash.	Aluminum pig	12,789,750	80
Reynolds Metal Co.	Longview, Wash.	Aluminum pig	9,999,000	80
Atlantic Refining Co.	Philadelphia, Pa.	Benzene, toluene	5,600,000	75
American Smelting and Refining Co.	Tacoma, Wash.	Sulfuric acid	891,739	80
Dye Oxygen Co.	Phoenix, Ariz.	Oxygen	48,500	70

FOREIGN

England: Two more plants for making sulfuric acid from pyrites are scheduled. National Titanium Pigments Ltd. is building one to produce 100 tons a day of concentrated acid. Production will serve the company's own titania operations.

The other plant will have the same capacity. Output will go to John Nicholson and Sons and Hunt Brothers Ltd. All three companies involved in the new ventures are subsidiaries of Laporte Chemicals Ltd. Laporte says that even at the greatly increased price, some firms in England were willing to contract for several years' production—on a cost-plus basis.

EXPANSION

Texas Gulf: The company will boost sulfur production at its Moss Bluff mine by approximately 50%. Texas Gulf has made application for the authority to go ahead with the project, has placed orders for the necessary boilers and other equipment.

Southern Alkali: A temporary snag has been hit in the \$10.2 million expansion program at the Natrium (W. Va.) plant. Reason: Certification was issued in the name of the Columbia Division of Pittsburgh Plate Glass. Change of name of the subsidiary means new certificate will have to be issued. (Southern Alkali was formerly owned by Pittsburgh Plate Glass and American Cyanamid, now is wholly owned by Pittsburgh).

Koppers: Work is now underway on the company's new multi-million ethyl benzene plant in Port Arthur, Tex. (CIW, Mar. 24). Foundation work is expected to begin within the next month.

General Refractories: The Philadelphia concern has recently borrowed \$6 million from two insurance companies (Metropolitan Life & Prudential). Money will be used to finance "additional plant facilities."

Heyden: Doubled capacity of ortho-chlorobenzaldehyde and ortho-chlorobenzoic acid is the aim of the new plant at Fords, New Jersey Division (CIW, May 12). Construction is started, completion is scheduled for October. Output will go to making the chrome dyes for army uniforms. The compounds can also be used in making civilian dyestuffs and pigments.

U. S. Rubber: An expansion program by the Naugatuck Chemical Division

will double the 15 million pound capacity of its Baton Rouge plant. The plant produces nitrile rubber latices, and styrene resins. New facilities will include an administration building, laboratory and storage buildings, as well as process equipment.

Merck: Production of penicillin at the Cherokee Plant (Danville, Pa.) is expected to start in August. Plans there call for expanded company production of niacin, cortisone and vitamin B₁₂. At present six of the twelve proposed new buildings are completed, the other six will be finished by September. Cortisone production, however, will not begin until early in 1952 because of the time required for installing the necessary equipment.

Solvay: A new mercury cell caustic soda-chlorine unit at its Solvay, N.Y., plant (near Syracuse) will double chlorine capacity there. Construction will start shortly; project will cost about \$10 million.

Armour: Production at the new \$12 million Armour Pharmaceutical Center is slated to start in about 18 months. Armour says the increased demands for Acthar, insulin and other pharmaceuticals necessitated the new manufacturing facilities.

KEY CHANGES

Malcolm R. Stephens: From chief, Chicago district, to associate commissioner, FDA.

Shelby T. Grey: From chief, Boston district, to chief Chicago district, FDA.

H. G. Thode: To president, Chemical Institute of Canada.

Robert Stephen Jane: To vice president, Chemical Institute of Canada.

Julian Paul: To assistant product manager, Fine Chemicals Department, Carbide and Carbon Chemicals Co.

A. W. Winston: From executive assistant to assistant manager, Magnesium Department, Dow Chemical.


Deane Waldo Malott: To director, B. F. Goodrich Co.

R. J. Williams: From superintendent, Southern Division, to assistant general superintendent, crude oil production, Lion Oil Co.

C. W. Johnston: To head of the Resin Research Section, Baltimore Laboratories, U.S. Industrial Chemicals.

CHEMICALS

from



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DESCRIPTION
A fine, white, crystalline material. The food grade has an average ammonia content (NH₃) of 23.6%.

USES

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Manufacture of Pharmaceuticals
Ammonium bicarbonate is used in dispensing and in certain pharmaceuticals.

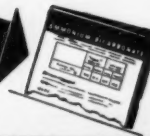
Other Applications
These include use in the preparation of ammonia salts, as indicator for rubber and as neutralizers for sulphate of ammonia prepared at gasworks and coke ovens.

PACKAGES
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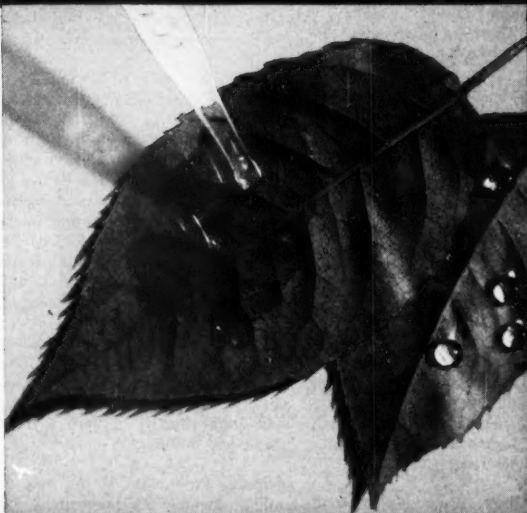
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Wetting action of ULTRAWET solution as compared with droplets of water.

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RESEARCH

SOS For Cotton Cure

Researchers at Kendall Mills, Paw Creek, N.C., warn of cavitoma—a serious and spreading disease of cotton.

Chemical defoliation is proposed as the most likely means of controlling this microorganism-caused condition. . . .

Which results in a weaker, alkali-sensitive, and effectively shorter staple cotton fiber.

Cavitoma, a cellulose-destroying disease of cotton, is quietly making rapid strides through the South. Small areas of infestation in 1948, scattered through South Carolina, Georgia, Alabama, Mississippi, Louisiana, and Arkansas, expanded in 1949 and made alarming headway in 1950. Despite its swift encroachment, the threat is still not universally recognized. In fact, some of the larger mills don't even know it exists.

J. P. Elting, research director of Kendall Mills, Paw Creek, N. C. is acutely aware of the score. More than 50% of the total cotton submitted to his laboratories over the past few years, has been classified as cavitomic. Wasting little time, Kendall researcher Laura Thomas Hall set out to determine the nature of the beast and appraise its practical significance to the mills. Her observations underscore a situation of concern to industry as well as cotton farmers and ginners.

Results: Cavitoma is caused by various cellulolytic bacteria and fungi, their metabolic products, or some combination of these factors. Although

the exact identity of the bad actors is still open to question, the damage they do is unmistakable. Cotton fibers are weakened and eventually break, producing "fly" and lint and an effectively shorter staple length. Formation of dye spots in vat-dyed fabrics and increased sensitivity to alkali are additional cavitoma-induced deficiencies.

In several instances extreme loss of fabric strength after the usual alkaline kier boil and bleach have been traced to fiber damage done by microorganisms. Deterioration of cotton fibers in warehouse storage has also been noted.

Diagnosis: Simultaneous existence of a very low reducing sugar content, pH values of 8 to 9.5 (of the water extract), and microscopic confirmation of fiber damage are the three important diagnostic standards. According to Elting, visible evidence of fiber damage as seen under the microscope is a necessary criterion for judging cotton cavitomic. Numerous non-cellulolytic microorganisms could change pH and probably reduce sugar content, but they would not cause obvious fiber damage. In other words, it is undoubtedly possible for a cotton to exhibit high values of pH and yet not be cavitomic.

Laura Hall's data indicates that cavitoma has always existed to a limited extent, but unknown conditions have brought about an increase in the amount of such cotton and the growing area. Humid weather, close planting, and over-fertilization are a few of the factors known to be conducive to microorganism growth. However, a good deal of additional research is needed to pinpoint specific causes.

Full significance of the present situation isn't known, but the implications have been considered important enough to be brought to the attention of the Department of Agriculture. USDA researchers, probing the effects of weather exposure and microorganism attack for several years, are in a good position to grapple with problems



J. P. ELTING: He uncovered a threat to cotton growers and processors.

of cavitoma. Their experience has shown that level of moisture supplied to the plant, fertilizer practices, insect-control, and other leaf-affecting influences have a pronounced effect on microorganism growth.

Drier the Better: Chemical defoliants—ammonium thiocyanate, calcium and sodium cyanamide—have been cited as promising preventives. These agents facilitate picking soon after boll-opening. This stage of development is crucial to the later well-being of the fiber. One USDA expert states "If rains come during the boll-opening, serious damage to the fiber frequently results. If rains come after the fiber has opened and dried normally, the damage appears to be much less severe . . ."

Chemical defoliant shortens the period of exposure of the open boll, cut down the chances of a drenching. They may well provide a point of departure in combating this growing agricultural menace.

New Rubber Check

The National Bureau of Standards has come up with a rapid, quantitative determination of rubber hydrocarbon based on refractive index of a solution containing a known weight of rubber in a known weight of solvent. Briefly, the procedure is as follows. A small sample of crude rubber is cut into pieces, weighed, and the resinous material extracted with acetone. After drying in a vacuum oven and another weighing, the piece to be analyzed is dissolved in 1-bromonaphthalene by



LAURA T. HALL: She determined its nature and practical significance.

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1-Nitroacridine
5-Nitro-6-aminoquinoline
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o-Nitrobenzoic Acid
Nitrobenzotriazole
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p-Nitrosalicylic Acid (4-Nitrosalicylic Acid)
3-Nitrosalicylonitrile
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Nitrosomethylurea
2-Nitroso-1-naphthylamine
o-Nitrosophenol
2-Nitroterephthalic Acid
2-Nitrothiophene
o-Nitrotoluene
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RESEARCH

heating and stirring for two hours at 140 C.

After cooling, the solution is weighed, and measured in a refractometer. From the observed data and the known densities and refractive indices of the pure solvent and the rubber hydrocarbon, the content of rubber hydrocarbon in the sample is calculated.

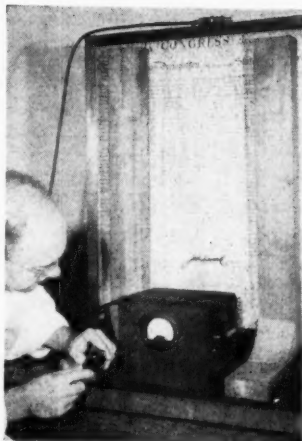
The new method goes on the assumption that only the rubber hydrocarbon (in the acetone-extracted rubber) is soluble in bromonaphthalene; index of refraction then should not be affected by any other crude rubber constituent. In addition, it must be assumed that the refractive index of the rubber-containing bromonaphthalene is a linear function of the volume per cent of dissolved rubber hydrocarbon. NBS researchers report—after a large number of measurements on different types of natural rubber—that both assumptions appear to be valid.

Not for Synthetics: Simplicity is the chief boast of the NBS technique. Previous methods, like the chromic acid oxidation and the rubber bromide, involve more complicated chemical procedures and calculations. But the refractive index method also has its shortcomings. Although precision compares favorably to the more conventional methods, it falls down on vulcanized and synthetic rubber—no problem to chromic acid oxidation techniques.

Military Aid: Basic research program, designed to aid in gathering and evaluating scientific information for development of Ordnance Corps equipment, has been set up at Duke University, Durham, N. C. New research center will be called Office of Ordnance Research.

Imported Pigment: Millmaster Chemical Corp. is now offering lead cyanamide for service as an anti-rust pigment in paint. Manufactured by the German firm, Duisburger Kupferhuette, the chemical has a following in Europe, but is relatively new to this country. Economy and good protection against corrosion are important features.

Straight Selection: According to a recent Shell Development Co. patent (U.S. 2,518,677), straight-chain hydrocarbons may be separated from branched and cyclic by treatment with aqueous urea solution. Straight-chain compounds selectively form crystalline molecular complexes. A small amount of wetting agent is



Helium Stops Fadeout

IN AN EFFORT to preserve two cherished national documents, the Library of Congress will have the original Constitution and Declaration of Independence sealed in helium-filled glass cases. Libbey-Owens-Ford Glass Co. will do the job Sept. 17. Periodic leakage checks will be made thereafter to insure continued protection.

added to depress emulsification and promote association of the crystals with the aqueous medium.

Oral Hormone: Abbott Laboratories is offering piperazine estrone sulfate in tablet form under the trade-name Sulestrex. A new soluble, oral estrogenic hormone, the substance apparently causes an extremely low incidence of nausea.

Stearate Info: Butyl stearate is the subject of a new technical service report issued by Witco Chemical Co. Data should be of interest to workers in the protective coating, plastics, textile, ink, cosmetic, ceramic, and metal fields.

Arthritis Research: The concept of tetracycline-sensitive organisms as causative agents in rheumatic disease will be probed with the aid of special research forms of the wonder drug. Chas. Pfizer & Co. will supply the drug in dosages as low as 1 mg for clinical research.

Fungus Killer: Ethyl vanillate will kill or inhibit all but two of the serious disease-causing fungi, report workers at Vanderbilt University.

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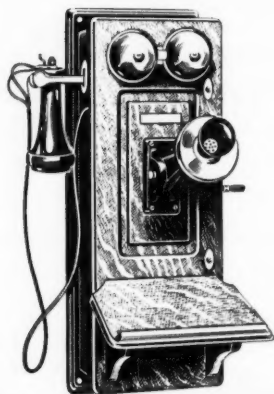
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Use of Orlon synthetic fiber saves nearly 50% of the cost of filter bags for carbon black recovery.

The fiber's excellent resistance to acid gases and its ability to withstand rough handling provide the saving.

Additional dividend: Orlon filter bags recover 10-15% more black than other types of collection bags.

A major manufacturer of carbon black, this week was well along in a program of replacing its entire installation of 10,000 filter bags with those fabricated from Orlon fabrics. Reason: Use of Orlon will enable the company, Cabot Carbon Co., to reduce the cost-per-bag-per-operating-day by nearly 50%.

Efficient collection of finely dispersed solid particles suspended in a gas stream, (1) to abate the nuisance of air pollution and (2) to provide more efficient recovery of these often-valuable dusts, has long been a difficult problem. And it has been particularly a tough one for manufacturers of carbon black because of the extremely small size of the carbon black particles.

Attention was focussed on this difficulty at Cabot's Guymon, Okla. plant by a changeover to the preparation of a different type of black. The cleaning system which had been successfully used for some time in making another type of black separated only 60-70% of the black produced . . . and with disastrous results to the profits derived from that unit.

Remedy, Bag Filters: To up the recovery efficiency, a secondary system, using bag filters for the final cleanup was installed. But resistance of the then-available fabrics to attack by acidic gases was so low that maintenance costs were overly high and the unit was shut down. Some time later bags made of synthetic fibers were tested and proved suitable. Of these synthetic fibers, Orlon was selected as providing the best answer. A unit was installed and, after processing wrinkles were ironed out, the company put in six more units at its Ville Platte, La. and Big Spring, Texas plants. In operation since February, 1951, these filters now collect 10-15% more carbon black than collected by previous bags.

The advantages of Orlon for this type of application are its resistance to acid fumes at high temperatures and its dimensional stability. This combination of properties enables producers to chop maintenance costs because the bags are changed at less frequent intervals. As a result, labor costs are pared and the unit is kept onstream for longer runs.

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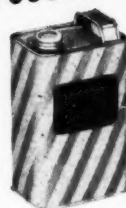
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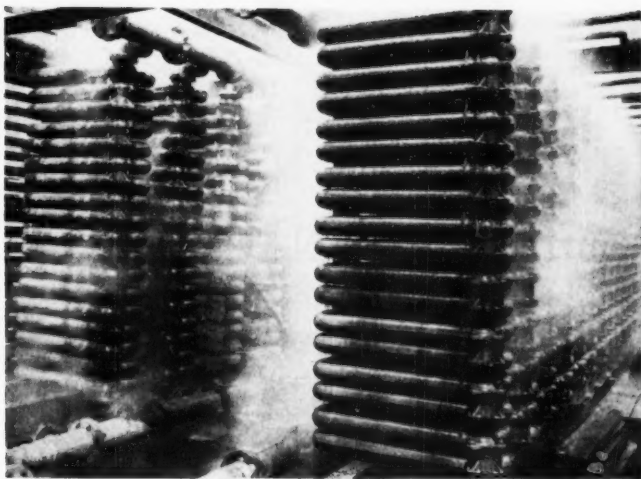
For "Sunday-best" garb that's ruggedly protective, you can't beat one of Continental's "F" Style cans. These handsomely lithographed cans add sales appeal to any product. They come in the following standard sizes: 1/2-pint, pint, quart, 1/2-gallon and gallon. All are equipped with pouring nozzles, and larger sizes are furnished with handles.



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Two in One

COOLING TOWER and acid cooler are combined at Marion Manufacturing Co.'s sulfuric acid plant, Indianapolis, Ind. The combination came about because large quantities of scale deposited on the coolers when the hardness in the plant's cooling water jumped from 325 ppm (as calcium carbonate) to 650 ppm, upped cooling costs \$40 per day. Reasons: Greater corrosion of acid pumps (hotter acid), higher cost of scale removal.

Instead of adding more cooling surface, engineers redesigned the system

for recirculation of zeolite-treated water instead of once-through operation. The original cast iron heat transfer sections, supplied by National Radiator Co., are used in the redesigned plant. Acid is brought from 240 F to 125 F by evaporation of cooling water.

Overhead nozzles spray water onto the coolers, which are set 13 feet above the catch basin so that evaporation can cool the water to its original temperature. Thus evaporative cooling takes place in the spray, from the surface of the cooling sections, and from the heated water as it falls into the catch basin.

Oil Shale Retort

Use of the "gas combustion" process to produce oil from oil shale will provide a hydrocarbon product at a cost comparable to that from petroleum, according to engineers of the U. S. Bureau of Mines.

To prove this assertion, the Chemical Plants Div. of Blaw-Knox Construction Corp. is building a unit for the Bureau which will process 150 to 400 tons of oil shale per day. To be located at Rifle, Colo., the new plant is patterned after a 6 ton-a-day pilot retort which the Bureau has operated at Rifle for some time. Operation of the new plant is scheduled to begin by July, 1952.

Self-Contained: The "gas combustion" process is entirely self-contained, requires neither an outside fuel supply nor cooling. The necessary heat for retorting is supplied by a low btu gas which is obtained from the shale.

Neither water cooling nor air cooling is required because the product leaves the retort as an easily recovered

mist. This ability to get along without cooling water is particularly important because most oil shale deposits are in arid Western regions.

Temperature Measurement: A new lacquer to measure a temperature of 2000 F has been added to Tempil Corp.'s line of temperature-measuring lacquers. The highest temperature for which previous lacquers could be used was 1950 F. Melting of the lacquer film indicates 2000 F.

Demineralizer: Salt is the only regent required for the new "Dual-Bed" demineralizer now being produced by Permutit Co. Removal of both water hardness and most of the alkalinity and sulfates is accomplished with two beds of ion exchanger in the same vessel. The resins utilized are the same two used in Permutit's mixed bed demineralizing unit. However, instead of being mixed, each is held in a separate bed.

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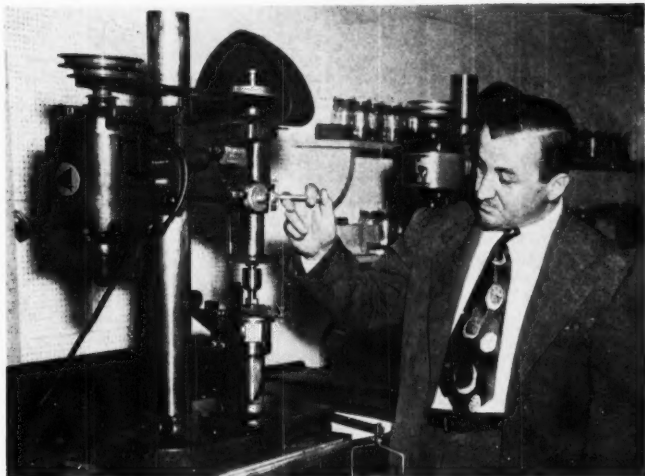
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VITO ESPOSITO: Fire fighting from the lab.

On Target: New Aero Fluid

New nonflammable hydraulic fluid, called H2—R. M. Hollingshead-Navy development—gets O.K. for use in Navy planes. About 96% is ethylene glycol and water (minimum of 35%); rest is secret.

Big selling point is nonflammability, but it rates high in other respects. It's also relatively inexpensive doesn't require conversion of hydraulic systems.

Makers of industrial hydraulic equipment, as well as commercial airlines, are testing the fluid.

A four-year research project of R. M. Hollingshead, Camden, N. J., manufacturer of automotive, industrial maintenance and aviation chemicals, has come to fruition in the form of H2, a new nonflammable hydraulic fluid that the Navy is now using for its aircraft, including jets. The Navy, through its Bureau of Aeronautics, has been collaborating with Hollingshead on it for three years, early this year tailored specifications* to fit it. They were followed this spring by a technical order telling flying personnel of plans for replacing all flammable hydraulic fluids with the new material, also designating it as the superseding fluid for a nonflammable fluid now being used in certain aircraft.

Commercial airlines, too, are interested in H2, have it under test, since the nonflammability feature offers them another means of reducing the number and seriousness of aircraft ac-

cidents—and at relatively little additional cost. Although the material sells for about \$4 a gallon—ordinary petroleum-base fluids are about \$1 a gallon—it is about one-third the cost of some other nonflammable fluids. More important, it can be used in present hydraulic systems without costly conversion.

Saw the Need: Hollingshead got started on the project when Fred Lee Jr., sales manager for aviation products, suggested to vice-president T. J. Bagley that the company look into replacements for petroleum-type hydraulic fluids. He was sure there was a ready market for a nonflammable type, for surveys of aircraft fires pointed to flammable fluids as the cause in some cases, a factor contributing to their seriousness in many others.

The importance attached to hydraulic fluids, a relatively small amount of which is present (in sys-

tems actuating various airplane mechanisms) in comparison to large loads of high octane gasoline, seems surprising. In use, however, these fluids are subject to pressures as great as 3,000 psi and to temperatures as high as 170°F. Rupture of a line results in a atomized spray of liquid, and under these conditions, petroleum type fluids are more flammable than gasoline. An electric spark or hot manifold can ignite the spray.

Bagley agreed, and the problem was turned over to Vito Esposito, imaginative research chemist in the new products department. Esposito had available Hollingshead's long experience in making both castor oil- and petroleum-base hydraulic fluids, help from Navy collaborators, and a spate of his own ideas in arriving at the final formulation. What it is exactly Hollingshead won't say; it is, however, admittedly a water-base product (minimum of 35%), and ethylene glycol in combination with that amount of water comprises about 96% of the formulation. These components with unnamed ingredients (thickening agent, viscosity-index improver, additive to increase lubricity, corrosion inhibitors) give performance characteristics about which the company is happy to talk—and deservedly so.

Met It, and More: In turning out a nonflammable product, Esposito hit the mark: The Civil Aeronautics Administration ran flammability tests at its Technical Development Center in Indianapolis, reported that when H2, under 3,000 psi was spurted through an oxyacetylene flame, there was no fire. Moreover, even after all water is evaporated, the residue, which remains oily, flashes at 760°F.

None of the characteristics required in hydraulic fluids has been sacrificed. H2 has a higher specific heat than petroleum-base products, preventing overheating of critical parts of the system by good heat transfer. High surface tension (40 dynes) means less danger of leakage. It is also claimed that there is no shear breakdown.

Although local staining near "O" rings and gaskets is greater with H2 than with petroleum types, this is because antioxidants and accelerators leached out of synthetic rubber are not soluble in H2 (as they are in petroleum fluids), hence are deposited on metal and rubber surfaces instead of being dispersed. This is not corrosion (the material is non-corrosive), and Hollingshead claims there is less

* MIL-F-7083 (Aer)

injury to such rings than with the older fluids.

The material freezes at -64F in static tests. Jet planes, however, go up to 40,000 ft., encounter temperatures of -100F. H2 has performed satisfactorily at such altitude because the plane is in action; also the fluid temperature rarely goes below -64F despite the temperature of the atmosphere. Important to proper functioning of actuated parts of the plane, the viscosity of the fluid at such low temperatures is sufficiently low to insure satisfactory operation.

Lubricity is so good that not only airlines, but other users of hydraulic fluids are experimenting with H2. Hollingshead points to test results to back up its claim in this respect. For example, it ran several hydraulic pumps for 1222 consecutive hours at rated capacity with no sign of wear.

This year, the company expects to sell the Navy large quantities of H2. No one airline would be so good a customer (a big one would use about 20,000 gallons a year), but in the aggregate, airline business is substantial . . . substantial enough to guarantee plenty of hot competition from other fluid makers as Hollingshead moves in with H2.

Vinyl on Nylon

Vinyl plastisol and organosol formulations have another outlet for their products in the 700,000 vinyl-coated nylon ponchos that the Army Quartermaster Corps has just begun buying. Not only is this the first procurement of ponchos made from synthetic fiber, but it is the first time that a large quantity of a QMC item has been coated with an organosol or plastisol paste.

This paste method of coating satisfies both producer, because it is faster and uses less costly equipment, and the QM, because it produces a better product, says John R. Couture, research expert on the staff of the Quartermaster General in Washington. Although the vinyl coating could be applied as a solution, by calendaring (coat applied dry under heat and pressure), and as a paste, new Army specs rule out the first method since it produces an inferior product. Dr. Couture told **CHEMICAL WEEK** last week that calendaring, which requires costly equipment, is expected to be replaced by the paste method.

A German development, the paste method allows use of cheap diluents. When applied as an organosol paste, the formulation is 70% solids; as a plastisol, 100% solids. Only three

coats need be applied to the nylon as contrasted to 8-10 by the old solution method.

• **California Soap:** Two of soapdom's three titans have just completed moves that mean California production for Western markets: Lever Brothers opened its new \$25 million soap, detergent and shortening plant in Los Angeles, and Procter & Gamble plunked down \$403,560 for a 134-acre plant site in Sacramento.

The Lever opening was in the traditional promotion-conscious style associated with soap and detergent selling. A helicopter carried first shipments to governors of the 11 Western states the new plant will serve. The plant (No. 8 for Lever) consists of six major buildings, will turn out more than 4,500 freight car loads annually of virtually all the company's line previously supplied by plants in the Mid-west and East.

How soon P&G will do anything with its new site depends upon the government's giving the go-ahead signal, and availability of materials. It hopes to get started soon, has a 1953 completion goal. Initially a six-story processing building, a two-story production building and a warehouse will be built, but long-range building plans may put the project in the \$25 million class. Certain soap and detergent lines will be produced at first, but eventually P&G's entire line will be made in Sacramento.

• **Automatic Blender:** Two or more of a variety of liquids can be blended automatically in a new proportionating unit, Figure 413 automatic liquid blender, developed by Bowser, Inc. (Fort Wayne, Ind.). The blender can be set for any combination of liquids without use of charts or calculations, since controls on each meter permit setting of ingredient proportions in increments to meet customers' needs.

The unit can handle such fluids as motor oils, hair oil, fingernail polish, polish removers, soaps, perfumes, syrups, etc. With hoods closed, it is about 53" high, about 39" deep. Width varies, depending on the number of sections, each of which contains one meter. These sections come in two widths—18" and 25½".

• **New Product Tests:** At least one Agriculture Dept. scientist feels that the present Federal Insecticide, Fungicide and Rodenticide Act should be strengthened to require extensive new products tests by manufacturers. He's E. L. Griffin, assistant chief of the insecticide division of the Production

and Marketing Administration, who told the Delaney Committee that there is no specific requirement that manufacturers make tests on the effectiveness and safety of products, although the law does require registration with the USDA before economic poisons can be shipped interstate. He favored abolishing registration "under protest" (by which a manufacturer may demand registration although the USDA disapproves), and establishing a new authority which can refuse registration unless a product lives up to the maker's claims.

• **Seam Compound:** Kord, an all-purpose weather stripping and seam compound, stable for underwater uses, has just been introduced by Sterling Paint & Varnish Co. (Malden, Mass.).

• **Dual-Purpose Cleaner:** Sanikleen is the trade name of a new odorless general purpose cleaner and sanitizer for industrial use developed by West Disinfecting Co. (Long Island City, N. Y.). It is formulated of a quaternary ammonium compound and a compatible synthetic detergent, permits cleaning and sanitizing in one operation. Tested for toxicity, it has been found safe enough for use in dairies, food plants, and other establishments where low toxicity is a prime requisite.

• **Fla. to N.C.:** Protexall Chemicals, manufacturer of a line of products for flame-proofing, mothproofing, and corrosion prevention, and a liquid detergent, is moving its site of operations from Holly Hill, Fla., where it originated, to Reidsville, N. C. Investors from the latter community backed the move.

• **Regional Branch:** Armstrong Co., Detroit, has leased a 10,000 sq. ft. building at Charlotte, N. C., for conversion into regional offices and plant to manufacture about 5 million lbs. a year of its line, which includes furnace cements, building industry adhesives, putty, caulking materials, glazing compounds. The branch will serve the two Carolinas, Virginia, Maryland, Alabama, Georgia, Florida and sections of Kentucky and Tennessee. Production is to start August 1.

PICTURES IN THIS ISSUE

Cover (bottom) and p. 23—DuPont Magazine; p. 11—David W. Corson—Devaney (top) & U.S. Navy (bottom left & middle); p. 13 (top)—Harris & Ewing and (bottom)—Hastings & Willinger; p. 14—Dorr Co.; p. 15—Harris & Ewing; p. 16—Sid Carson—McGraw-Hill; p. 27—Hollingshead Corp.; p. 33—Texas Co.



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Boron Trifluoride	Potassium Fluoroborate
Boron Trifluoride Complexes	Potassium Fluoride
Chromium Fluoride	Potassium Titanium Fluoride
Fluoboric Acid	Silico Fluorides
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Fluorinating Agents	Zinc Fluoride
Frosting Mixtures	
Hydrofluoric Acid Anhydrous	

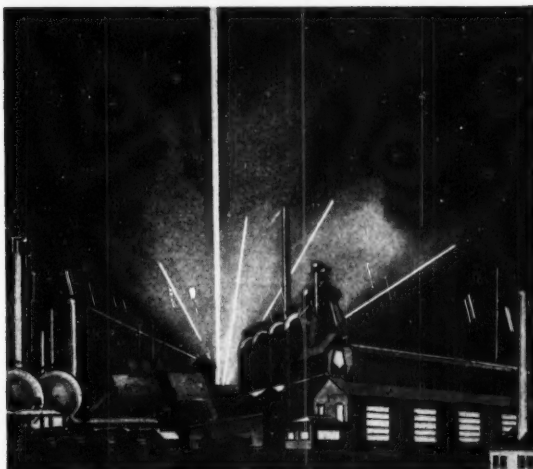
Available upon request . . . M. C. A. Safety Data Sheets SD-25 and H-10 furnishing essential information for safe handling and use of hydrofluoric acid.

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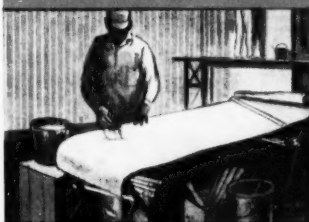
ORONITE D-40, while primarily a detergent, also has high surface active properties which make it an ideal wetting agent in compounds marketed in dry powder or slurry form. Used in water soluble pastes and glues, D-40 increases spreading power and penetration, facilitates mixing.

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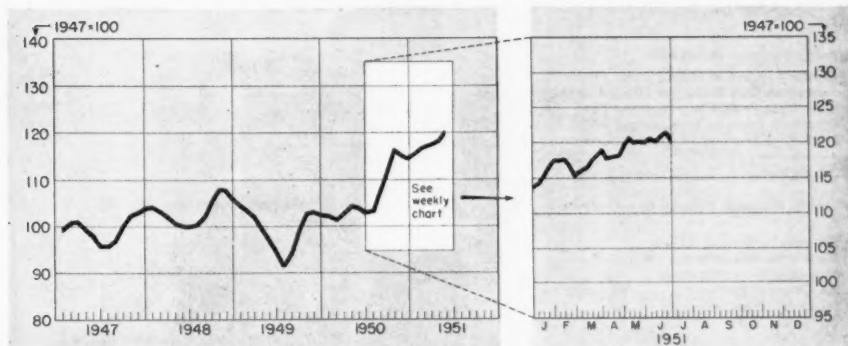
In metal cleaning and de-greasing preparation.

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CHEMICAL MARKETS....



CHEMICAL INDUSTRIES OUTPUT INDEX—Basis: Total Man-Hours Worked in Selected Chemical Industries

The chemical market this week hovers on the quiet side. Most manufacturers are winding up, or recovering from, their pricing calculations under CPR-22. Seasonal vacation shut-downs (e. g., textiles, soap, plastics molders) play a part in the prevailing calm.

A new factor affecting the market is the Korea truce talk. Some downturn is definitely attributed to the prospects of cease-fire—because Congress may not push industrial mobilization as hard without some immediate urgency.

So far, the price dips have been confined mostly to resale, where some erstwhile jumbo-sized increments over manufacturer's quotations have shrunk to more modest margins. But many of the chemicals that have been conspicuously on the resale skids (e. g., phenol) are still sold out at the producer's end.

It would be hard to turn anywhere in the chemical industry without noting the all-pervading influence of the Office of Price Stabilization. While keeping manufacturers busy with price adjustment reckoning, the OPS found time to issue several new price directives during the week.

For example, the long-awaited price ceilings on naval stores, that has kept the trade in a hold-your-breath state for several months, finally came through. Here are the new ceilings: Turpentine will sell at 80¢ a gallon, just about where it has been for the past month. Most grades of rosin are upped 30-40¢ a cwt.

Processors in Savannah won't get the \$40 a barrel for crude gum they had sought—but at least naval stores should eventually snap out of the doldrums, now that the price uncertainty is over.

Right now, however, the paint industry is not ready for more turpentine. Shelf paints are still stacked high, although industrial finishes are in good demand.

MARKET LETTER

Weekly Business Indicators

	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	120.5	121.0	101.5
Bituminous Coal Production (Daily Average, 1000 Tons)	1,839.0	1,723.0	1,758.0
Steel Ingot Production (Thousand Tons)	2,000.0 ^o	2,055.0	1,765.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	139.2	139.9	114.3
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	234.5	239.7	185.4

^o Estimated.

Monthly Business Indicators—Production (1935=100)

	Latest Month (May)	Preceding Month	Year Ago
All Manufacturing & Mining	223	222	195
Durable Manufactures	277	275	231
Non-Durable Manufactures	198	199	181
All Chemical Products	297	297	256
Industrial Chemicals	536	530	443
By-Product Coke	176	178	171

Paintmakers, OPS has just agreed, have been caught in a tight pinch pricewise. This week, Regulation 6 gives them this option: They may either (1) calculate their cost increases (under CPR 22) and adjust prices accordingly or (2) take a flat 15% price gain on such items.

Don't count on Congress to go to bat for price controls. Already, in grudgingly granting a 30 day lease of life to OPS, it prohibited any price rollbacks during the month.

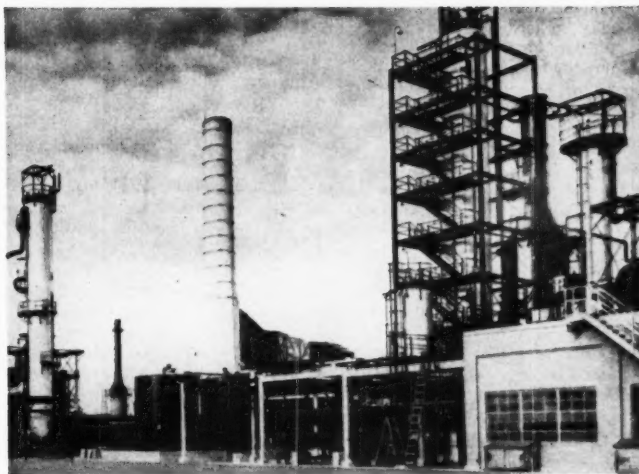
What it foreshadows: continued controls but in watered-down form. Too, commodity speculators may have a hey-day if, as is expected, appropriations for effective price control enforcement are slashed.

But the price of chemicals is not solely in the hands of OPS. A goodly number of chemicals have dipped well below ceilings. Reason: boosted output, consuming bottlenecks, stalling buyers.

This may not be too evident yet at manufacturers' price levels, but in the supply-and-demand-sensitive resale market there's no mistaking the trend.

Chemical buyers can take only limited comfort from this trend, however. When the full impact of industrial mobilization is felt later in the year, there will be a stiffening in demand that will overtax productive capacity. Then present price dips will level off, head for OPS ceilings.

Congress won't adopt a hands-off policy when it comes to increasing production of defense-needed chemicals. It will see that NPA gets the money for its program, and you can look for faster tax write-offs, quicker action on priority requests, further surveys into national needs.



LUBE OIL EXTRACTIONS: More here and a lot besides push. . . .

Furfural Goal Up

New furfural production will boost output from 50 million pounds to about 70 million pounds annually.

Rejuvenated synthetic rubber programs preempt more furfural for butadiene recovery, but other uses also seek more.

Long-term outlook: Greatly widened horizons for furfural and its derivatives; abundant materials insure stable prices.

When new facilities for furfural start operating later this year at Omaha, Nebraska, another milestone will be set down to mark the steady progress of this country-bred chemical. From its first commercial production nearly thirty years ago, output has steadily risen until now the annual rate is 50 million pounds. With the increase from now-a-building capacity, production should surpass a yearly 70 million pounds.

Today as then, the Quaker Oats Co. remains the acknowledged kingpin of furfural making. From the first drum sold, the status of furfural has been carefully advanced in a classic integration of technologic improvement and market development. The objective during this time has been unvarying—to keep prices down and expand the market.

Governed by this policy, the price of furfural dropped from the introductory \$2.50 a pound in 1922 to a low of 9¢ a pound in the thirties.

On June 8, prices for furfural and its derivatives, furfuryl and tetrahydrofurfuryl alcohol, were advanced 1¢. The boost on furfural, which is now at 10½¢ a pound, is the first

since 1943. As might be expected, higher costs of raw materials and labor made the raise necessary.

Supply and Demand: Quaker Oats will meet the growing demand for furfural by the output of its present plants at Cedar Rapids, Ia., Memphis, Tenn., and a plant soon to be completed at Omaha, Neb. The Memphis plant was purchased from the government two years after the close of World War II and was expanded to meet the demands of DuPont, who use furfural as a starting material in the manufacture of adiponitrile. This use, incidentally, is one of the two largest for furfural today.

The other major uses for the selective extraction and recovery of butadiene in dehydrogenation of petroleum butenes. Because of the terrific upsurge in demand for butadiene for the synthetic rubber program, more furfural is ticketed for this high-priority purpose.

Two Now: These two uses are only a start in the long list of widespread applications of furfural. Among these can be included the upgrading of lubricating oil by furfural extraction of the aromatics, a process developed

and licensed by the Texas Company. And phenol-furfural plastics, one of the earliest and still-going-strong outlets, are coveted for their corrosion resistance. A multitude of other uses have been coming in within recent years for premium solvents, plasticizers, and a variety of other specialized products, made from furfural or furfural derivatives.

Peek Ahead: From these established needs as well as the potentialities of its progeny, the future of furfural is well along the way to meeting the rosee predictions of chemurgists.

Citric to Ease

To meet unfilled citric acid orders, Chas. Pfizer & Co.'s new plant at Groton, Conn., is now pointing towards full-scale production. Not only does the demand for food purposes keep growing, but gains are hoped for in other potential markets: metal cleaning, plasticizers, and many others.

Who Else: This burgeoning demand does not escape the attention of other pharmaceutical producers who have experience in fermentation, and would not be averse to getting into the act. In Indiana, Miles Laboratories is readying a new plant, will soon join the select circle of producers. Miles, a big consumer of citric and citrates in the manufacture of Alka-Seltzer, favors the deep-tank or submerged fermentation process. Pfizer lists its faith in both the deep-tank process as well as the more conventional tray fermentation (CIW, Jan. 20).

Anyone else who has plans for citric production wouldn't mind having Pfizer's know-how and market position. Out of last year's production of 35 million pounds, Pfizer made around 90%. The remainder was derived chiefly as the by-product of citrus fruit operations.

With the new production coming in this year, total annual capacity should be closer to 50 million pounds.

On the Record: Until the synthetic fermentation method was developed in the early twenties, the U.S. was dependent on Italy for citric acid. Following the recovery from citrus fruit and commercialization of the fermentation process, the U.S. was able first to fill its own needs, later to become an exporter.

Right now, the resale market is crying for citric acid either for domestic use or for export. Resale prices for citric have been hovering between 50-60¢ since the first of the year, and no signs of weakening are evident.

CIVIL DEFENSE IN MODERN WAR

Just Out

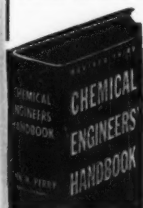
1 Presents a program covering every major aspect of civilian defense against atomic, bacterial, and chemical warfare. Deals with modern air warfare—types of aircraft, weapons employed, way in which explosives are employed. Provides information on high explosives, poison gases, incendiary bombs, harmful bacteria, atomic bombs, etc. Shows the methods of protecting industries, communities, homes, and individuals against the various destructive weapons; tells how a civilian defense program for national, state, and local governments works—how to set up units, what they should do, etc. By Augustin M. Prentiss, Brig. General, U.S. Army (Ret.) 429 pages, \$6.00

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CHEMICAL MARKETS.

Manufacturers price today is in the neighborhood of 25¢ in carloads. Fortunately for the consumer, Pfizer voluntarily froze its price last August for a one-year period.

Stepping Out: Although it is possible that citric prices could be raised under CPR-22, Pfizer's past policy, based on the assumption that a potentially much greater market is available by keeping prices at the lowest feasible level, argues against this eventuality. For one case, the development of the citrate plasticizers is expected to increase, not only for their unique, valuable properties, but also because of economic shifts.

Citric is aiming for the alkylid resin field as a competitive poly basic acid. The acid may also head into metal cleaners and polishes, as well as a variety of other uses.

In Sight: By fall the supply picture will improve, although the way new citric uses are cropping up, demand should stay ahead for some time.

Wax Pressure

When most users of carnauba wax in the United States mull over today's high prices, some become irate and others sigh for the good old days when costs were "way down." Of course, some of the old days were not so good, price-wise, and they were just as bothersome because carnauba prices have fluctuated in a most unpredictable manner. In short: U.S. consumers have always been in a ticklish spot on carnauba, for they have little control over either price or supply from the single source—Brazil.

Until now, this situation could hardly have been improved; there was no organized action on the part of U.S. consumers. An industry advisory committee, meeting with the National Production Authority in Washington,

has just started a comprehensive survey to foster the commercial development of possible carnauba substitutes and to explore other means of improving the overall wax supply.

The government would like to see some progress toward solving the problem if only to minimize our dependence on foreign sources in the interest of national security. Industry, in addition, is looking for price stability—lower prices if possible—and above all, adequate supplies.

Others Tried: Research and pilot plant development has shown promise for several domestic vegetable replacements, but these have not been carried to full commercial use because the basic economic incentive was never sufficiently strong. Of this group, one of the most promising is sugar cane wax, a by-product of sugar cane refinery "press cake." In its properties, sugar cane wax approaches carnauba in hardness, melting point and luster. A potential 7 million pounds annually would be available from this source if fully utilized.

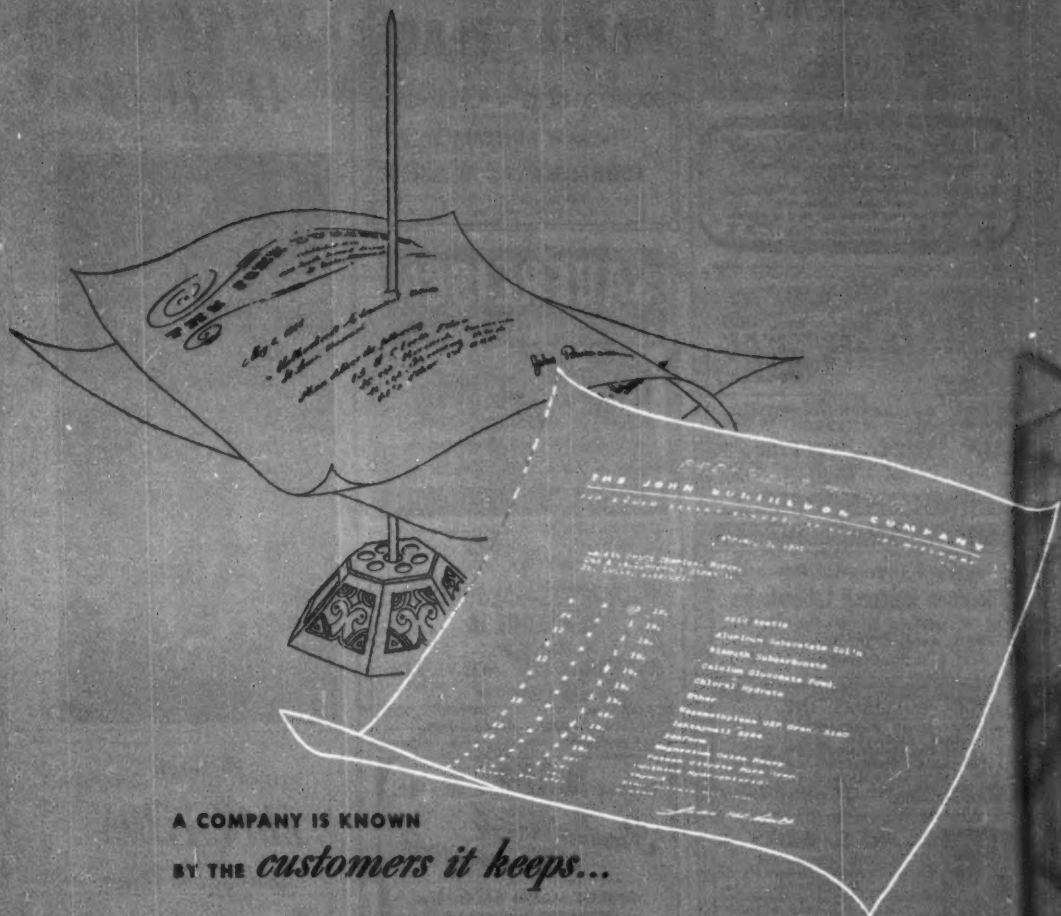
Another promising candidate is bleached montan wax, derived from lignite deposits. One California producer expects to get early assistance from NPA in expanding his operation, may turn out some so-called IG waxes.

Synthetic resins and synthetic waxes, already in wide use, are slated to come in for wider play in the future, will lessen eventual dependence on natural products.

Inklings: The knowledge that U.S. carnauba wax consumers, who take more than 80% of Brazil's output, finally mean business, may push Brazilian producers to higher goals. Another likely—and welcome—result would be stabilization of price under the influence of a little more competition.

GOVERNMENT NEEDS

Bid Closing	Invitation No.	Quantity	Item
General Services Administration, 1500 Fidelity Bldg., Kansas City 6, Mo.:			
July 9	KC-16311	22,000 lbs	laundry chip soap
July 9	"	5,400 lbs	scouring powder
July 9	KC-16313	436 drums	sweeping compound, P-S-863 Type I
July 9	"	400 drums	sweeping compound, P-S-863 Type II
General Services Administration, 1114 Commerce St., Dallas, Tex.:			
July 10	FW-15204	2,500 gals	white paint—TT-P-47A
July 10	"	3,685 gals	thinner—TT-T-291A
July 10	"	15,500 gals	linseed oil—TT-O-364
July 10	"	5,000 gals	oil paint—TT-P-40
General Services Administration, Region 2, 250 Hudson St., N.Y. 13:			
July 10	NY-2-H-28454-A	10,000 lbs	soap
July 10	NY-2-H-28756-A	7,000 lbs	sodium metaphosphate
July 16	NY-2-H-29749	2,000 lbs	scouring powder
July 16	"	195 lbs	hand soap
July 16	"	5,000 lbs	paste soap
July 16	NY-2-H-29751	9,000 gals	floor wax, (water emulsion)
July 17	NY-2-H-29752	2,800 gal	primer paint



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1—FEINC Rotary Vacuum Filter, 4'6" dia x 6' face, string discharge, Aluminum and Stainless Steel.

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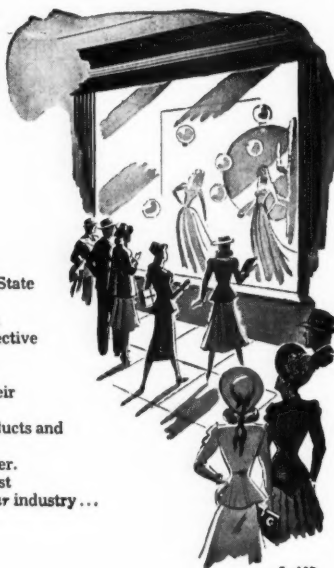
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McGRAW-HILL PUBLICATIONS

BOOKS.....

An Introduction to Organic Chemistry, seventh edition, by Alexander Lowy and Benjamin Harrow, revised by Harrow and Percy M. Apfelbaum. John Wiley & Sons, Inc., New York, N.Y.; 494 pp., \$5.

Here is the seventh edition of an introductory textbook with the emphasis placed on the basic fundamentals of organic chemistry, but always presenting its material in the light of recent important applications and industrial possibilities. The sections dealing with aliphatic chemistry—especially hydrocarbons—along with polymers have been revised to keep pace with recent developments. The authors discuss the subject matter in such a way as to indicate to the student the multiple connecting links that organic chemistry has with medicine, dentistry, pharmacy and the biological sciences.

Encyclopedia of Chemical Technology, in 12 volumes, edited by Raymond E. Kirk and Donald F. Othmer, Interscience Publishers, New York, N.Y., \$25. per volume.

Seven volumes of this comprehensive reference work have appeared already with the remaining 18 scheduled for publication at seven month intervals. Covering the full range of industrial knowledge, the more than 1000 authoritative articles furnish information on materials, production methods, reactions, historical background, processes and equipment for the chemist and chemical engineer. The reference volumes are complete with illustrations, tables and flowsheets.

MEETINGS..

Summer Seminar in the Chem. of Nat. Products, Univ. of Brunswick, Fredericton, N.B., July 10-14.

Natl. Soybean Processors Assn., annual meeting, Edgewater Beach Hotel, Chicago, August 16.

Amer. Pharm. Assn., Statler Hotel, Buffalo, N.Y., August 26-31.

Summer Symposium, Nuclear Energy Development, annual meeting, Oak Ridge, August 27-September 7.

Amer. Chem. Soc., Diamond Jubilee Meeting, New York, N.Y., September 3-7.

Amer. Soybean Assn., annual meeting, Fort Des Moines Hotel, Des Moines, Iowa, September 6-8.

Natl. Instr. Conf. & Exhibit, Sam Houston Coliseum, Houston, Texas, September 10-14.

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Products and literature in this issue are listed on these pages. There are three indexes. (1) Editorial items on new products, new equipment, new literature; (2) products advertised. (3) The index of advertisers is on the following page.

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TECHNICAL LITERATURE

CHEMICALS	
Vinyl Finishes	40C
Waxes	40A
Weed Control	40B

EQUIPMENT

Carbon Brushes	40F
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Instruments	40E
Meters	40J
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Aluminium fluoride	41c
Ammonium acetate	41d
Ammonium bicarbonate	17
Caustic soda	10
Chlorine	1
Copper fluoborate solution	41a
Copper naphthenate, report P-15	42
Cyanuric chloride	3
Diodo hydroxy quinoline	B23a
Fine	35
Fluorides	29
Industrial aromatics	T25
Lead acetate	26
Metallic ricinoleates	
Barium	21a
Cadmium	21b
Calcium	21c
Magnesium	21d
Zinc	21e
Neopentyl iodide	20a
Nitrilic acid	20b
Nitromesitylene	20c
Nonylphenol	20d
Organic peroxides, di-t-butyl peroxide	T38
Para amino benzoic acid	B23b
Polycy butadienestyrene latices	1
Potassium chromate	22c
Potassium thiosulfate	41b
Sodium bichromate	22a

Sodium chromate	22b
Sodium sulphate	22d
Surface active agents	
D-40	30b
Sodium sulfonates	30c
Ultrawet series	18
Wetting agent "S"	30a
Containers, cans, style F, lithographed & coated	24
Containers, shipping sacks, multi-wall paper	2
Filter media, metallic cloths	4
Mist eliminators	T23
Research facilities	B25

Professional Services 36

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT	
Positions Vacant	37
Positions Wanted	37
SPECIAL SERVICES	37
BUSINESS OPPORTUNITIES	
Wanted	37
EQUIPMENT	
(Used or Surplus New)	
For Sale	37
WANTED	
Equipment	37
Miscellaneous	37
ADVERTISERS INDEX	
Consolidated Products Co., Inc.	37
Equipment Clearing House, Inc.	37
First Machinery Corp.	37
General Container Co.	37
Merkle, Wm.	37
Perry Equipment Corp.	37

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Editorial Items

20A	23A	40A	40D	40G	40J	40M
20B	25A	40B	40E	40H	40K	40N
20C	25B	40C	40F	40I	40L	

Advertisements

1	4	18	20d	21d	22c	B23b	26	30b	T18	41c
2	9	20a	21a	21e	23d	24	29	30c	41a	41d
3	10	20b	21b	22a	T23	T25	30a	35	41b	42
3	17	20c	21c	22b	B23a	B25				

Expires October 7, 1951

BOOKLETS

Chemicals

Waxes

32-p. booklet in its seventh edition, containing information on procedures, products and formulations for the manufacture of all types of synthetic wax polishes and finishes. The booklet makes note of changing market requirements since the appearance of the last edition in October, 1948 as well as new Government specifications and other factors which influence the standards of the wax polish industry as a whole. Cornelius Products Co.

Weed Control

Manual prepared for maintenance personnel giving data on methods and results brought about in chemical brush and weed control as practiced by various industrial and agricultural organizations; also presented are cost data and evaluations of short-term versus long-range control programs. E. I. duPont de Nemours & Co., Inc.

Vinyl Finishes

4-p. booklet dealing with vinyl paint systems—types and uses—designed for the protection of metal, concrete, plaster and wood against corrosive action of chemicals, fumes and salt water; applications include maintenance, manufacturing and construction projects. Protective Coating Co.

Equipment

Pressure Instruments

19-p. bulletin devoted to firm's line of draft and low pressure instruments, discussing indicators of various types, recorders and controllers; essential features such as diaphragm units, bearings, calibrating springs, and differential valve assemblies are explained and a two-page application table serves to aid in the selection of the correct instrument for varying conditions. The Hays Corp.

Instruments

44-p. condensed catalog covering firm's line of instruments and accessories, such as various types of manometers, inclinometers, draft gauges, liquid level gauges, sight feed bubblers and packaged test units for use in aircraft and industrial calibration test work. Meriam Instrument Co.

Carbon Brushes

28-p. booklet describing the design, application and manufacture of carbon brushes for electric equipment. The booklet is intended to familiarize users with the physical characteristics that must be known before proper recommendation can be made for a brush application. General Electric Co.

Diaphragm Motor Valves

Specification sheet devoted to air-operated diaphragm motor valves for use with either narrow throttling band or on-off

control instruments; details on size, construction, body materials, connections, etc., are given. Minneapolis-Honeywell Regulator Co.

Viscometers

8-p. booklet presenting recording viscometers specifically designed to measure automatically the viscosity of solutions in the actual processes where they are used, thereby eliminating the necessity of periodically removing samples for laboratory tests. Norcross Corp.

Running-Time Recorder

Bulletin giving descriptive and operating information concerning the application of running-time recorder to presses, factory machinery, refrigerators, pumps and motors, conveyors, continuous ovens and furnaces. The Bristol Co.

Meters

12-p. booklet dealing with industrial meters, intended as guide for the proper selection of meters for measuring more than 200 chemicals, petroleum products and other liquids with varying corrosive characteristics. Complete table of metered liquids contains material recommendations for the construction of meter parts for various services. Rockwell Mfg. Co.

Delayed Coking Process

20-p. brochure entitled, "New Horizons—Lummus at Pan-Am Southern," discussing the economics and processing significance of delayed coking and featuring the Pan-Am southern unit at El Dorado, Ark., specifically—with sequence photographs, flow diagram and complete description of the process and operating results. The Lummus Co.

Packaged Steam Generator

6-p. folder presenting steam generator designed for light oil and combination light oil and gas—heavy oil and combination heavy oil and gas—and for straight gas operation and finding power and heat applications in factories, hospitals, office buildings, etc. Detailed diagram of boiler is included. The Titusville Iron Works Co.

Potentiometer Controller

Data sheet giving engineering specifications of the electronic strip chart pneumatic control potentiometer, an instrument combining advantages of pneumatic control with those of strip chart instrument. Minneapolis-Honeywell Regulator Co.

Inspection Equipment

8-p. bulletin covering optical and illuminating equipment for inspection jobs from simple naked-eye illuminated inspection to high-power, close-tolerance microscopic examinations, black-light, fluorescent, and inaccessible or out of view inspection. Arthur S. La Pine & Co.

ADVERTISER'S INDEX

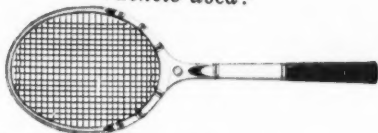
AMERICAN CYANAMID CO. Agency—Hazard Advertising Co.	3
AMERICAN POLYMER CORP. Agency—Bennett, Walther & Menadier, Inc.	1
ATLANTIC REFINING CO., THE Agency—N. W. Ayer & Son, Inc.	18
BAKER & ADAMSON PRODUCTS, GENERAL CHEMICAL DIVISION, ALLIED CHEMICAL & DYE CORP. Agency—Atherton & Currier, Inc.	3rd Cover
BAKER CASTOR OIL CO. Agency—Samuel Croot Co., Inc.	21
BAKER CHEMICAL CO., J. T. Agency—Wildrick & Miller, Inc.	26
CHEMICAL MANUFACTURING CO. Agency—J. Hayden Twiss, Advertising	17
CHEMICAL SOLVENTS, INC.	36
CONTINENTAL CAN CO. Agency—Ratten, Barton, Durstine & Osborn, Inc.	24
DELTA CHEMICAL WORKS Agency—Miller Advertising Agency, Inc.	20
DISTILLATION PRODUCTS INDUSTRIES, A DIVISION OF EASTMAN KODAK CO. Agency—The Griswold Eshleman Co.	9
FISHER CHEMICAL CO., INC. Agency—Frelwald & Coleman Advertising	B23
HARSHAW CHEMICAL CO., THE	29
LUCIDOL DIVISION, NOVADEL-AGENE CORP.	T38
Agency—Landsheft, Inc.	
MALLINCKRODT CHEMICAL WORKS Agency—The Philip Rittler Co.	35
MANN & CO., INC., GEORGE	36
MATHIESON CHEMICAL CORP. Agency—Doyle, Kitchen & McCormick, Inc.	2nd Cover
McGRAW-HILL BOOK CO.	34
METAL TEXTILE CORP. Agency—The Franklin Fader Co.	T23
NATURAL PRODUCTS REFINING CO. Agency—Michel Cather, Inc.	22
NEWARK WIRE CLOTH CO. Agency—Sanger-Funn-H, Inc.	4
ORONITE CHEMICAL CO. Agency—L. C. Cole Co.	30
RAYMOND BAG CO. Agency—H. T. Shephard Agency	2
SAUERREISEN CEMENTS CO.	36
SINDAR CORP. Agency—Hazard Advertising Co.	T25
SNELL, INC., FOSTER D. Agency—Ray Hawley Advertising	B25
WITCO CHEMICAL CO. Agency—Hazard Advertising Co.	Back Cover
WYANDOTTE CHEMICAL CORP. Agency—N. W. Ayer & Son, Inc.	10

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FOR SPORTSMEN ONLY...

In what games are these rackets used?



1 Played by royalty in England hundreds of years ago, the present version first appeared under the name "Sphairistike" in 1873 in Nantclwyd, Wales.



2 Originating among the North American Indians, this game was often played by as many as 600 to 1,000 braves at one time who preceded the game with ceremonial dances.



3 Modification of popular game of the 14th century called "Battledore and Shuttlecock"... the racket was originally covered with parchment.



4 This game was first played by the inmates of Fleet Prison, England, in the early 19th century; hence the small enclosed court still used today.

See next column for answers

Just as these four rackets were designed to meet the special requirements of a particular sport, the above B&A Fine Chemicals are especially suited to a number of important industrial applications.

To supply the varying fine chemical requirements of the process industries, B&A offers an extremely wide range of products. Many may be suitable for your needs. For a complete listing, write today for booklet FC-7.



FOR CHEMICAL USERS ONLY...

Which of these B&A Fine Chemicals fit your production needs?

★ COPPER FLUOBORATE SOLUTION

Developed by General Chemical to serve urgent World War II needs of the Electroplating Industry, this fluoborate electrolyte is again in great demand. Low in metals, particularly lead, cadmium, iron, cobalt and zinc, B&A Copper Fluoborate is produced in convenient liquid concentrate form and assays 44-46% minimum $\text{Cu}(\text{BF}_4)_2$. Among its many important uses is the plating of steel core wire where uniform thickness is of greatest importance.

★ POTASSIUM THIOSULFATE

Assaying a minimum of 96% $\text{K}_2\text{S}_2\text{O}_5$, Baker & Adamson Potassium Thiosulfate is a uniform white crystalline material, particularly low in sulfide sulfur. It is used in silver plating baths, as a blueprint eradicant, and for a number of other applications where the use of Potassium Thiosulfate is desirable.

★ ALUMINUM FLUORIDE

A white to light cream-colored powder of uniform particle size and carefully controlled neutrality, Baker & Adamson Aluminum Fluoride assays a minimum of 98% $\text{AlF}_3 \cdot 3\text{H}_2\text{O}$. It is finding increased use in those specialized process operations which require a uniform composition, such as the manufacture of roofing granules, and brazing and soldering of light metals.

★ AMMONIUM ACETATE

Assaying in excess of 96% $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$, B&A Ammonium Acetate is particularly low in iron and heavy metals. Due to the high purity of its uniform white crystals, it is the ideal selection for many exacting process uses. Among them are the manufacture of airfoam rubber; in medicine and pharmaceuticals; assistant in dyeing; mordant in printing fabrics and in the manufacture of heat transfer salts.

Sportsmen will quickly identify these rackets as being used in: Tennis (1), Lacrosse (2), Badminton (3), Squash (4).

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Already proved in numerous applications that range from protecting fish nets to fence posts, WITCO 8% Copper Naphthenate is produced under close chemical control in Witco's own plants—your best assurance of getting effective results!

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